

AMERICAN EX-PRISONERS OF WAR

NATIONAL MEDICAL RESEARCH COMMITTEE

ARTHRITIS - ALCOHOLISM - VISUAL - ULCER - VARICOSE VEINS
SKIN - IMPOTENCY - BRAIN DAMAGE - TUBERCULOSIS - ETC.

AFTER-EFFECTS OF IMPRISONMENT

Packet 3



COMPILED BY,

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"WE EXIST TO AID THE MAN WHO CANNOT HELP HIMSELF"

MedSearch

Preface to Packet No. 3

It gives me great satisfaction to write a Preface for Packet No. 3.

The National Medical Research Committee (Med-Search) of the American Ex-Prisoners of War, was organized in 1969 at the suggestion of the Past National Commander John Lay, by Lt. Col. Garry Anloff, Chairman and Stanley Sommers, Researcher. I had much correspondence with Garry during the early seventies.

Due to poor health, Garry retired in 1974 and Stan Sommers was named Chairman, with Peggy Sommers, Harold and Virginia Page and George A. Falconer, Ed.D. as members, and Alvin Poweleit, M.D. as Medical Advisor.

The tremendous collection of pertinent medical literature relating to starvation deficiencies and diseases of ex-prisoners, put together and into such useable form, including the five packets—has been nothing short of miraculous. The committees, past and present, have lived to see their dreams come true. "We exist to aid the man (ex-prisoner) who cannot help himself."

Because of the great deal of work done by the committees, laws have been passed to the benefit of the ex-prisoners, and the Veterans Administration has been made alert to the sad plight of many of the ex-prisoners. A great step has been taken toward achieving much needed medical benefits, and fair compensation in behalf of the ex-prisoners.

My congratulations to the committees for a job "Very Well Done."

A handwritten signature in black ink that reads "Eugene C. Jacobs". The signature is written in a cursive style with a large, prominent "C" in the middle.

Eugene C. Jacobs
Colonel, M.C., U.S. Army (Retd).

INTRODUCTION

Never before in this country's history has such a large group been exposed to starvation, torture (both physical and psychological); and inhumane treatment as have the 130,000 plus Americans who have been held prisoners by the Japanese, Germans, North Koreans, North Vietnamese, Viet Cong and other Axis powers.

Dr. Albert Haas, New York University, believes that many symptoms found in former camp prisoners today are either mis-interpreted or overlooked in diagnosis. He urges physicians in private practice to acquire more information about the late sequelae of starvation and stress, so that they will be better able to recognize and manage these conditions.

In this packet, requested by many ex-prisoners of war, we have attempted to give a general survey on studies that have been published on the after-effects of imprisonment and arthritis, rheumatism, bone disease, alcoholism, eyes, ears, back and joint, veins, impotency, skin, adverse climatic environment, gastrointestinal and liver disease.

Quoting from "Arthritis and Allied Conditions", Joseph Lee Hollander, M.D. and Daniel J. McCarty, Jr., M.D. 8th Edition 1972: Page 9;

"Military factors which maybe expected to cause an increase in the incidence of rheumatoid arthritis include emotional disturbances, exposure to dampness, prolonged chilling, exposure to respiratory infections, etc.."

You may find that certain studies have been incompletely treated in this packet. In this case, note listed titles and references which give a more detailed account. A packet, such as this, can only hi-lite. These studies may be ordered through your local reference librarian.

The present knowledge in the area of after-effects of imprisonment is limited and more research is needed. The results of further research would help all ex-prisoners of war and all people who suffer throughout the world from starvation and the stresses of imprisonment now and yet to come. There may be preventative measures taken for the future misfortunates so they never experience our problems in the years to come.

This packet is for the benefit of all ex-prisoners as well as their spouses and children so that they may better understand their health problems. Also for anyone who in one way or another becomes engaged in supporting the cause of the ex-prisoners of war.

If you have any questions about your health, PLEASE, consult your personal doctor or the Veterans Administration doctor--they will help you.



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JOINTS

PATHOLOGY OF THE CAPTIVITY OF THE PRISONERS OF WAR----TOME II

Works of the International Medical Conference

Brussels-November 1st to 14th, 1962

Doctor PIQUET - Paris

"REMARKS ON THE OSTEO-ARTICULAR PATHOLOGY OF THE EX-PRISONERS"

I will be brief, but as rheumatologist, I would like to attract your attention on some points of the osteo-articular pathology of the Ex-prisoners of War.

1. From the rheumatological point of view, the premature senescence is not only responsible for the increase in frequency of arthrosis among the ex-prisoners of war (frequency with previous reports have shown to be two or three times higher among the ex-prisoners than a general population not having undergone captivity) but it can sometimes also be, through a predisposing effect, responsible for the rheumatism known as inflammatory (evolutive chronic polyarthrititis, poly-arthritis of the collagenosis or ankylosing spondylarthrititis).

- a. The pathology of the increase in frequency of arthroses among the prisoners may be:
 - (1) either a premature vascular senescence
 - (2) or the frequency and the prolongation of the overstressing_ microtraumatisoms during the captivity which injured more precociously than normally, the cartilaginous or articular ligamentary formations.
- b. But for the polyarthritic rheumatisoms of inflammatory type with belated occurrence, one may accept that the flavouring factor is caused by the more precocious exhaustion of the functional capacities of the peripheral endocrine glands (especially the suprarenal), by their overstress due to the psycho-affective or somatic stress suffered during captivity over long periods. On these functional deficient endocrine glands, secondary factors, occurring after the captivity can cause with a greater frequency and with a greater precociousness, a more profound deficiency favouring the hatching of so-called inflammatory rheumatisoms when second aggressions occur (infectious or other).
- c. For the ankylosing spondylarthrititis (BECHTEREW DISEASE) which is also of the inflammatory type, the same factor or premature corticosuprarenal exhaustion may be invoked.

But moreover for those who had during their captivity a more or less complete oculo-urethro-synovial syndrome (syndrome of Reither or of Fiessinger-LeRoy Reither) one must take into account our present better knowledge of this syndrome. This syndrome is now considered by the rheumatologists as the most frequent cause of ankylosing spondylartitis. Moreover, one no longer ignores that there are chronic and prolonged forms of this syndrome, developing manifold relapses are sometimes fairly simple and localized (for example, under the form of simple recurring intestinal episodes) that they do not attract the attention of the patient.

In these very prolonged chronic forms of the REITHER Syndrome, the apparition of the belated ankylosing spondyl-arthritis, several years after the captivity is possible. Also the presumption of the origin of such an ailment even with the belated start, should be accepted, if one can find in the past records of the former prisoner, a dysenteric syndrome or one of the constituents of the oculo-urethro-synovial syndrome.

2. Finally, for what concerns the osseous system, the existence of starvation osteopathy (Syndrome of LOOSER MILKMANN) more or less patent during the captivity may possibly play a part which favours the apparition of the premature senescence of the osseous system. The disturbances of the protein texture of the bones (osteo-

porosis) or the mineral load of the bony tissues (osteomalosis) due to lack of nourishment (protein and calcium) during the captivity, may also possible play a part, even when they have only been temporary, as predisposition to a premature process of osteoporosis involvement, in phase of presenescence.

The previous attack of the protein texture may, most probably, leave as sequelae a fragile condition of the osseous tissues towards the causes of normal or premature senescence or new deficiencies, more or less comparative, which certain diets followed for economic or medical reasons can cause.

DEFINITIONS:

senescence: the process of growing old

arthrosis: Pus formation at line of juncture between bones

ankylosis: stiffness or fixation of a joint resulting from disease or surgery

Oculo (ocular): relating to the eye

urethro: combining form relating to uretha (carries off urine from bladder)

synovial: the lubricating fluid of the joints

osteomalacia: softening of the bones

osteoporosis: increased softening of the bones

Osseous: bonelike, concerning bones

* * * * *

ARTHRITIS DUE TO INTESTINAL AMEBIASIS

Annals of Internal Medicine 34:112 - 1231....1951

Arthritis is the commonest extra-intestinal complication of bacillary dysentery. Although usually monarticular involving the knee and commonly accompanied by serious effusion, polyarthritis simulating rheumatoid arthritis may occur. Furthermore, it is likely to occur weeks or months after the acute phase of the disease has subsided than in the early dysenteric period. Thus BONNIN and KAY recently reported five cases occurring six weeks to eight months after the subsidence of mild bacillary dysentery. Local therapy to the involved joint was of no avail until the intestinal pathogen was eradicated.

Amebic arthritis is clinically indistinguishable from rheumatoid arthritis and is subject to spontaneous remissions and exacerbations. In all cases, gastrointestinal symptoms were minimal and arthritic complaints predominated. One patient never had diarrhea while in another arthritis occurred two years after the last attack of diarrhea. The diagnosis of amebic arthritis was established by the isolation of the ameba from the stools and by the subsequent rapid response of the arthritis to ambacidal therapy.

It is suggested that arthritis in these cases was due to sensitization of the toxin elaborated by the ameba, rather than to secondary infection of intestinal ulcers. While amebic arthritis is probably rare, examination of the stools for *E. Histolytica* is indicated in all cases or "rheumatoid" arthritis with concomittant gastrointestinal disturbances.

* * * * *

ALCOHOLISM: NORWEGIAN CONCENTRATION CAMP SURVIVORS, Edited by AXEL STROM 1968

In altogether forty-nine (49) cases (i.e., slightly more than 20%) there had been problems concerning alcohol and over-indulgence in pills during the postwar period. Such cases have usually been regarded (when war claims have been examined) as resulting from some psychopathic traits and it was considered that the resulting disability was not caused by war-time experiences. The commission has adopted the view that misuse of alcohol in many instances must be regarded as a symptom and

might be the result of damage caused during captivity and, wherever possible, has recommended socio-medical treatment.

Thirty-six (36) of the forty-nine (49) cases of alcoholism and drug addiction were attributed to the after-effects of the war: anxiety, difficulties in personal relationship, etc.. In eight (8) cases other circumstances were held responsible and in five (5) cases it was impossible to come to a definite conclusion.

* * * * *

NORWEGIAN CONCENTRATION CAMP SURVIVORS: Edited by AXEL STROM, 1968 (New York Humanities Press)
(additional eye research on pages 18 and 19)

THE OPTIC NERVE: The most frequent sign was defects in the visual field. This was present in nineteen (19) cases of whom eighteen (18) had an encenpalopathy count of two (2) points or more. Of these, nineteen (19) cases, ten (10) had a concentric contraction of the visual field, seven (7) had hemianopsia or quadrant hemianopsia, one (1) had a paracentral and one (1) a central scotoma.

Defects in the visual field were far less frequent than found by CRAWFORD (1961) in Canadian ex-prisoners from Japanese camps. We might possibly have found more defects if our examination had been so orientated.

Additional ophthamologic conditons were observed in 10 patients; Chorio-retinitis (2), amblyopia of unknown cause (2), progressive myopia (1), tramatic retinitis (1), amaurosis and atrophy of the left optic nerve (1), arteriosclerotix retinitis (1), macular degeneration (1), glaucoma associated with atrophy of the optic nerve(1).

References:

1961-Crawford, J.N. In Later Effects of Imprisonment and Deportation PP 146.

* * * * *

DELAYED DISEASE AND ILL-HEALTH

Published by the Norwegian Association of Disabled Veterans,1969 Edited by Arve Lonnum

Cruickshank's (82) divided the syndromes into two main groups, one with predominantly peripheral nerve lesions (beriberi neuropathy, alcoholic poly-neuritis, and painful feet syndrome), the other with lesions chiefly in the central nervous system. Among the latter were Wernicke's encephalopathy, niacin deficiency incephalopathy, bulbar neuropathy, spinal cord syndromes - particularly spinal ataxia and spastic paraplegia or a combination of the two - and finally, deafness because of damage to the eighth cranial nerve.

Pellegra was sometimes accompanied by spinal cord syndromes. Both the posterior and the lateral tracts might be affected causing spasticity, ataxia, impaired vibration and joint sense, and sometimes also defective vision and hearing. Autopsy revealed marked degenerative changes of the posterior columns and the optic nerves, whereas the lateral columns were but slightly affected. Niacin deficiency has been indicated as the cause of pellagra, but the real explanation is probably much more complex.

Many other authors besides Cruickshank have described neurological disorders, especially a high incidence of mononeuritis and unspecific encephalopathies, in Japanese prison camps (92,349,353,386,388). Among the subjective troubles in encephalopathy may be mentioned; General weakness, diplopia, incoordination of muscular activity, vertigo, a tendency to fainting specially when changing position, retardation of mental and physical activity, loss of initiative, irritability, sensitiveness to noise, low spirits, sleep disturbances, lack of memory, reduced power of concentration, mental depression, and impotence. The prognosis was regarded as good, except for cases of atrophy of the optic nerve or with complications like advanced age, dysentery, other gastrointestinal disorders, malaria, and so on. The etiology was complex, certainly not limited to calorie deficiency (349).

Selye (341)...Among cranial nerve affections were seen: Loss of smell, atrophy of the optic nerve, optic neuritis, retrobulbar neuritis, hemianopsia, central and paracentral scotomas, amblyopia, ophthalmoplegia, facial paresis of peripheral as well as central type, defective hearing and deafness due to acoustic nerve neuritis and vertigo due to lesions of vestibular nuclei.

BACK AND JOINT DISORDERS

"In prisoners of war there occurred a chronic traumatizing of the back, hips and knee joints due to heavy labor and protracted over-exertion (363). Such overexertion may be injurious even in peacetime (14) and it is easy to see that the resulting damage will be far greater in prisoners in enfeebled condition with weak muscles and often hunger osteopathy.

Hence a number of different physical war injuries have proved permanently disabling and have resulted in reduced work capacity during the postwar period."

"In the following the main emphasis is placed on degenerative disorders of the spinal column. However, during the postwar period pathological changes have been observed also in joints outside the spine, thus an increased frequency of chronic polyarthritis was demonstrated among Belgian ex-prisoners. This was believed to be due to infectious diseases in enfeebled individuals. There was likewise an increased incidence of Bechterew's disease, probably because of cold, humidity, extreme exertion and other hardships, in the camps (93).

It is natural to associate the degenerative back and joint disorders with the osteopathy suffered during the war. In all likelihood this was a combination of osteoporosis and osteomalacia (210). The causes of this osteopathy were no doubt complex (396), and heavy labor probably played a role. But there are also unknown factors. This is shown by the fact that not all people exposed to undernourishment developed osteoporosis.

The negative calcium balance no doubt exhibited by many prisoners is of particular interest. In many camps the daily food ration contained no more than 137-178 mg of calcium (93), whereas the minimum requirement is 200-300 mg of calcium (261). Accordingly, such a lack of calcium in the diet may, by itself, lead to osteoporosis. A particularly interesting question in this connection is what consequences such a negative calcium balance may have had during the postwar period. It has been found that in the ordinary population the calcium balance becomes negative at about 40 years of age. (261). This will entail a gradual loss of calcium from the skeleton with increasing age. If this is true, it seems a reasonable assumption that prisoners, released from the camps at more than 30 years of age and in whom a considerable negative calcium balance was already present, have never been able to re-establish the normal calcium content of the skeleton. Furthermore, the normal calcium decrease due to age will have added itself to the deficit already present and hence further weakened the skeleton. Theoretically, therefore, an increased incidence of skeletal and joint disorders was to be expected. And this is what has actually been found. Of course, the reason for this is more complex than the above outlined negative calcium balance. However that may be, it must be supposed that prisoners, relatively old on liberation, have been particularly predisposed to a premature, age-conditioned osteoporosis and the treatment of this osteoporosis in ex-prisoners has often been neglected.

Belgian authors have taken a particular interest in rheumatic disorders in former prisoners. Bone fragility and weakened and fatigability of the muscles as in old people have been observed (93). There were likewise other changes due to premature aging of bones, cartilage, ligaments, joints and muscles that is in the entire locomotor apparatus. Many deportees from 25 to 40 years of age presented advanced "age" arthropathies. Among 604 Belgian ex-prisoners selected at random, rheumatic disorders were observed in 7.5% the first 3 months following the liberation. Five years later such troubles were found in 15.4%, and subsequently with

ever rising frequency. A particularly striking finding was chronic arthropathy of degenerative character, that is arthrosis, specially in the intervertebral joints, the hip and knee joints. The part of the spinal column most frequently affected was the lumbar region. Microtraumas caused by too heavy work have no doubt been partly responsible for this. There were found protruded discs displacing the ligaments. This caused irritation of subligamentary tissue with subsequent development of osteophytes and later osteophytic bridge formation. Root irritation and radicular pains were not uncommon. Disorders of the spinal column and arthrosis of the hip & knee joints have been the cause of considerable disability among Belgian ex-prisoners and rehabilitation has been difficult, in part because one did not understand the true nature of the condition. (93).

In France, many investigators have taken an interest in the degenerative disorders of the spinal column and the joints in former prisoners (134,150,158,313,383). So-called ossious senescence has been a fairly frequent finding in deported Frenchmen. In the spinal column this appeared to be incurable and osteoporosis with a tendency to fractures persisted. The premature aging of the joints resulted in kyphosis, kyphoscoliosis, arthrosis, coxarthrosis, scapulohumeral periarthritits, discopathies, lumbago-sciatica, and cervicobrachialgias, conditions were demonstrated in 80% (150).

There was a high incidence of such disorders also among the 227 Norwegian concentration camp survivors first examined (258), particularly back trouble which was present in 68.3%. Lumbago-sciatica occurred in 57 cases, lumbago in 22, cervicobrachialgia in 92, cervical radiculopathy in 29, other back troubles in 23, and myelopathy in 26. X-Ray examination revealed fractures of the spinal column in 18 cases. Also other marked changes like osteochondrosis, spondylosis, spondylarthrosis, concave vertebral end plates as in fish vertebrae, and other degenerative changes appeared on the roentgenograms (258).

In the Norwegian material there was a clear correlation between clinical back disorders and serious back traumas during captivity. Since bones and joints were undoubtedly in a poor condition during the imprisonment, traumas played a far greater role than in peacetime. In these ex-prisoners the traumas endured were severe, but several authors have pointed out the significance also of microtraumas caused by strenuous work when in a generally enfeebled condition (104,151,216,396). The back became more vulnerable also because of the weakened muscles. This increased the tendency to faulty carriage (396). The ligament and muscle apparatus suffered at the same time. Also in peacetime there is a definite relation between long lasting (more than 10 years) heavy manual work and degenerative changes of the spinal column, the hip and knee joints (14).

Besides in Belgium, France, and Norway, degenerative disorders have been a frequent finding in former prisoners also in Israel (104), Czechoslovakia (300), the United States (236) and Germany (151,396).

Opinions have differed as to whether the degenerative back & joint disorders in former prisoners of war should be regarded as consequent upon the war with a view of war pension legislation. In most countries applications for war pension have been dealt with on the basis of peacetime clinical experiences. As a consequence, such disorders were formerly usually regarded as not valid (247). Of late the attitude to the assessment of degenerative back & joint diseases has changed somewhat, however, today many doctors will admit such states in ex-prisoners who have suffered back traumas or severe strain because of too strenuous work during semistarvation (246). However, all things considered, the present author is of the opinion that the assessment of applications for war pensions has been erroneous with reference to many former prisoners suffering from wear & tear disorders of the back and joints."

PAINFUL FEET & LEGS--ULCERS & VARICOSE VEINS

"Bordering on central lesions are the painful feet syndrome and neuropathy with arterial hypertension.

Arterial hypertension has been observed in connection with certain deficiency disorders in undernutrition. Thus elevated blood pressure was observed in the painful feet syndrome which may be caused by lack of niacin, possible also of riboflavin (81,82).

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ARTHRITIS & ALLIED CONDITIONS by Joseph Lee Hollander, M.D. & Daniel J. McCarty, Jr.
M.D. 8th Edition 1972

Page 9--"Military factors which may be expected to cause an increase in the incidence of rheumatoid arthritis include emotional disturbances, exposure to dampness, prolonged chilling, exposure to respiratory infections, etc.."

Page 1422--"Predisposing causes of Foot Strain Systemic diseases which produces weakness or malnutrition, deficiency of Vitamin B-1."

* * * * *
LATER EFFECTS OF IMPRISONMENT & DEPORTATION--INTERNATIONAL CONFERENCE by the World
Veterans Federation, The Hague, Nov. 20-25, 1961.

FROM FRANCE--We thus come to a problem which is frequently encountered and which requires important study, the problem arising from vascular deficiency of the lower limbs of a very large number of former deportees.

This emerges from an investigation of several thousand deportees who were carefully followed at the discharge center responsible to the Ministry of Pensions in Paris.

Of all the vascular sequelae from which many deportees suffer, there are perhaps none that are more precocious and that thereby raise an important social problem for these sequelae make it impossible for the majority of the ex-deportees concerned to engage in any occupation requiring a prolonged standing position.

a) What, then, are the clinical aspects that are seen most frequently? It is a question of deportees who display a precocious and often very broad infiltration of the hypoderm affecting the lower third of both legs with unilateral predominance and multiple cutaneous modification: dry, sclerotic skin, seat of squamous or exudative dermatitis, varicose dilations, the importance of which is often far from being in relationship with that of the sclerotic infiltration, edema of the instep with, almost always, process of arthritis of the articulations. The standing position is always painful. In the case of many of them, this is the tableau of all the complications of venous deficiency with varicose ulcers and exzematous dermatitis. In some cases, it is the precocious development of an arteritis with unilateral predominance and the usual series of symptoms characteristic of this.

b) What etiological process explains the precocious installation and development of such vascular deficiencies in a very large number of deportees? The first and most constant element if the importance and tenacity of the edema of the lower limbs, which is almost constant among all deportees.

We learned from questioning that this edema was rather important and especially that it continued for a rather long time after their return home.

This persistent edema was the cause of a more or less important deterioration of the subcutaneous conjunctive tissues, involving the beginning of infiltration of the hypoderm, as can be seen in the sequale among former suffers from phlebitis.

This infiltration can regress, but the longer it develops in a former deportee, especially when he has reached or passed the age of 50, the less it regresses later, and it tends to affect the wall of the vessels that traverse it, that is, it predisposes to the development of varicose veins in the area of the two saphenas.

Of course, in the case of persons who were predisposed to varicose disorders owing to family background, this process develops all the more rapidly and extensively.

Furthermore, precocious vascular sclerosis is widespread among all deportees. Since the arterial system is involved in it, as is the venous system if one takes systematically the arterial oscillations of all former deportees, as I have observed in a very large number of them, always on the occasion of examinations at the Ministry of Pensions, one notices that, in the case of persons of the same age, they are certainly lower and more reduced than in the case of a person who has not undergone deportation. This explains the precocity of arteritis in a large number of former deportees.

c) Another important element is that of the sequelae proper due to ulcers of the legs in deportees.

The frequency of leg ulcers among deportees during their stay in the concentration camp is well-known. This observation struck many deported doctors and those who were able to observe them at the time of liberation when the deportees returned to their home countries.

This condition was observed not only in those of 50 or over but equally in young people and even in children.

Among the causes, let us mention extreme undernutrition of persons who were obliged to remain standing for hours on end in bitterly cold weather, local infection following multiple injuries of badly vascularized limbs, arterial hypotension aggravating the slowness of circulation, various cutaneous infections (cutaneous streptococemia was very frequent) together with pulmonary ailments: these ulcers were foci of other miscellaneous localizations and developed all the more quickly in the case of persons who already had varicose or arterial deficiency added to venous deficiency.

Many of these ulcers were frequently encountered in deportees who had worked in salt mines, and were even localized at times in the upper limbs.

All these causes and considerations are important in attempting to explain at present the great frequency of vascular and cutaneous disorders in the legs of a large number of former deportees.

These disorders, which go beyond the purely vascular localizations, affect the whole hypoderm, modify the cutaneous surface and are accompanied by articular and osseous lesions.

But what is chiefly dominant is the deterioration of the venous system, varicose ampullary dilatation reaching the area of the two saphenas with infiltration of the hypoderm: the skin loses its suppleness, plaque induration just above the skin of the tibial and peroneal surfaces.

The frequent edemas are not always proportionate to the importance of the venous dilatation, which leads one to suspect lymphatic deterioration with upper blocking.

If one studies the background of such persons outside the "hunger edema" one notes that almost all them had "leg ulcers" during their deportation.

All these more or less persistent symptoms during and after deportation were thus the starting point of a more or less broad and progressive destruction of the entire subcutaneous system of the legs.

That is the reason why one of the chief (and perhaps the most painful) of the sequelae is found at present among so many deportees.

These vascular and conjunctive deteriorations of the lower limbs in so many former deportees raise an extremely important social problem and one that affects all of them. It accounts for the fact that they are unable to engage in any work necessitating a sustained standing effort, apart from all the other pathological manifestations.

Diseases of the bones, joints, and muscles were registered in about half of the ex-prisoners and in about one-third of the controls. This diagnostic group was responsible for 24.5% of the ex-prisoners: sick days and 16.7% of those of the controls. Lumbago-sciatica was the most common disease within this group.

* * * * *

IMPOTENCY

NORWEGIAN CONCENTRATION CAMP SURVIVORS edited by Anel Strom, 1968 New York Humanites Press

Impotency or strongly reduced potency was reported in 76 male ex-prisoners. Age distribution can be seen in Table 30-----

Age group	Impotent	Total	Percentage of Impotency
35.....	9.....	27	33.3
40.....	12.....	43	27.9
45.....	16.....	36.....	44.4
50.....	20.....	44.....	45.4
55.....	11.....	27.....	40.7
60.....	6.....	26.....	
65.....	2.....	10.....	21.6
70 & over...	0.....	1.....	

+++++

Kinsey (1948) has said that only 1% of men are impotent at the age of 40, this percentage increases to 3% in the fifties, to 10% in the sixties and 24% in the seventies. In the eighties 77% are impotent. We see that in the age group under sixty we find a remarkable high incidence of impotency. Since anxiety was a characteristic feature in a number of our ex-prisoners, it was natural to look at impotency in relation to this. According to Ellis (1961) impotency of a psychogenic origin based on anxiety shows itself either in the form of ejaculatio praecox or an erectile impotency with retained morning erection. none of our patients suffered from ejaculatio praecox and doctrine disturbances which could explain their impotency. Depressive reactions in the form of melancholia can cause impotency, especially where loss of libido is concerned. The depressive reactions in these patients however, have not been of melancholic character. Impotency in their cases seems to stem from a condition of the central nervous system, a general exhaustion. Ford, (1951) and his co-workers describe the sexual inactivity of animals after the removal of the cortex. We see in Chapter VII that impotency correlated closely with the neurological status and the degree of encephalopathy. It seems likely, therefore, that the impotency found among these patients was conditioned by the organic brain damage.

A number of symptoms were present among the combat-fatigue patients, significantly more often than in other groups. These symptoms included combat dreams, momentary black-outs, sweaty hand or feet, diarrhoea, excessive smoking, severe headaches, depression and excessive jumpiness. Three-fourths of the combat-fatigue group reported that there were periods when their symptoms interfered with their work. Almost one-half reported that their sex lives were unsatisfactory.

Another symptom of interest is impotency, which was common among those examined. This symptom showed a correlation to the neurological status and to the degree of encephalopathy. Of 142 prisoners with an encephalopathy point count of 2.5 or more, impotency was present in 57 cases (40%), compared to 19 of the 85 with a point count of 2.0 or less, i.e. 22% (0.02 > P < 0.01). Accordingly, impotency seems to be connected with the organic cerebral changes.

(You will also find impotency referred to on page 3)

The 1,943 patients who suffered from various skin disorders were examined during the years 1958-1965 in the Department of Dermatology, Hadassah University Hospital.

The patients were divided into two groups, one included those who had been in concentration camps (476), and the other those who had not been (1467). It was found among patients who suffered from various skin disorders that:

1. among those who were interned--27% developed Psychosomatic Skin Disorders (P.S.D.), while among those who were not interned, only 10% developed P.S.D.;

2. in most cases the dermatological disorders were accompanied by behavioral disturbances of a general nature, in some they were related to the skin disorder;

3. there is a difference in the percentage of P.S.D. in the two sexes. In patients who had been in CC, 33% of males developed P.S.D. but only 22% of females.

4. the most frequent diagnosis in the group of patients who had been in C.C. and who developed P.S.D. was pruritus (22.6%), dyshidrotic exzema (18.7), urticaria (15.5%), psoriasis (14.1%), and neurodermatitis (13.3%);

5. the most frequent diagnosis in males were pruritus, psoriasis and neurodermatitis, In females the commonest disorders were dyshidrotic exzema & urticaria.

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ADVERSE CLIMATIC ENVIRONMENT

Effect on the Body

DELAYED DISEASE & ILL-HEALTH published by the Norwegian Association of Disabled Veterans, Edited by Arve Lonnum 1969

At the first stage of ischemia the foot is cold, swollen, and cyanotic. It does give on palpation, however, contrary to the frozen foot which feels like bone. The patient walks with difficulty and the skin is anesthetic. There follows a hyperemic stage, lasting from days to weeks. The foot is red, swollen and hot. Blisters are formed and there is no sweating.

Frostbitten feet are painless whilst immersion foot is accompanied by deep pain and superficial burning and aching. Although the extremities may recover they often remain oversensitive to cold (174).

Qualitatively, the symptoms and findings following the acute stage of frostbite do not differ from those associated with immersion foot or trench foot. According to degree of the damage the symptoms appear in the following sequence: Edema, hyperemia, abolished perspiration, numbness, paresthesias, pains, anesthesia, muscle weakness, and finally gangrene (51). Chilblain, which represents a chronic condition following frostbite, ordinarily affects the following regions: 1) The cartilage of the ear, 2) the fingers, specially the extensor surface, 3) the toes, 4) the nose, and 5) the cheeks.

Much attention has been given to the circulatory disturbances associated with local cold damages. One of the first symptoms of prolonged cooling is increased transudation and development of edema. This tendency is further accentuated by immobilization which involves an increased hydrostatic pressure (234). The tendency increases if the extremity is constricted or if the patient is in poor physical form due to under-nutrition which insufficient protein supply or to cardiac or vascular disease. A vicious cycle may rapidly establish itself with arteriolar spasms, deranged permeability of the small blood vessels, and increasing local damage to the tissues. On the other hand, the cooling prevents a fulgurant development because the metabolism is reduced as a result of the lowered temperature.

In severe cold damages as trench foot and immersion foot, there may occur considerable degenerative and inflammatory changes in all layers of the vessels with thrombus formation, and gangrene may follow. Fibrinoid degeneration of the

arterial wall is likewise common (341). The term vasoneuropathy has been applied to circulatory disturbances in cold injuries (10). Vascular thrombosing has been observed from 24 to 48 hours following frostbite. Other changes may occur even earlier already after 15 hours. It is possible that thrombus formation and secondary changes in the trench foot. The term endarteritis obliterans ex frigore has been used. There first occurs a proliferation of endothelium in the veins. Then the connective tissue between the muscle layers is infiltrated in the veins. The blood stagnates in the extended veins, and proliferative changes in the arteries develop (10).

Changes in the extremities caused by cooling seem to be able to progress long after the exposure to cold is over, and previous cold injuries appear to predispose to subsequent vascular disease, Thus information about exposure to cold is remarkably frequent in cases of spontaneous gangrene. Local congelations are believed to predispose to arteriosclerosis obliterans-specially in the anterior tibial artery-in particular if a defect in the artery or disturbed arterial function was present beforehand (10,50,156,188,355). Thus exposure to cold suffered by concentration camp inmates has been followed by arterial disease in the extremities (51).

Experiments with isolated tissue fragments have shown that nerve and muscle tissue are more sensitive to cold injuries than skin, connective tissue, tendons, and bone. Consequently, muscle and nerve damage are common in local cold injuries (174). In animal experiments one has demonstrated basophilia, cellular infiltration, giant cell formation, fragmentation and abnormal variation of the thickness of the muscle fibers, and edema in the muscles. The extent of the pathological changes has shown correlation to the duration of the cooling (61). In extremities amputated following cold injuries, muscular atrophy has been demonstrated even in the absence of artery or nerve lesions (355).

In laboratory animals repeated exposures to cold have provoked peripheral neuritis (10), and neuritis of other cause can be markedly accelerated by exposure to cold (63). In neuritis due to cold, the medullary sheaths of the nerves are swollen and axons and medullary sheaths show signs of necrosis. In persons who survive severe cold exposure, permanent nerve lesions may ensue.

Local cold injuries may furthermore cause osteoporosis (10,341,355). Calcinosis of the soft parts has likewise been observed (10). Also in the joints there may occur changes due to cold, including bleedings in periarticular tissues. In the articular capsule, the first changes appears as a peeling of the endothelium in the synovial membrane and an infiltration of this. The older the animals, the more sensitive to cold is the articular cartilage.

The cartilage may shrink and the degeneration may progress to the joint that all cartilaginous tissue is absorbed. There occurs increased neoformation of bone which may fill the joint cavity and cause ankylosis (10).

Finally may be mentioned some pathological states which, although they may develop without preceding cold injury, develop far more rapidly and have far more serious course when associated with exposure to cold. In other words cold represents an important provoking factor. Among such disorders are: Dermatitis atrophicans (Herxheimer), Raynaud's disease, erthromelalgia, sclerodactylia, scleroderma, lupus pernio and acrocyanosis.

Thus cold injury may cause numerous sequelae (61)and serious delayed effects may occur after a very long time (174).

GASTROINTESTINAL & LIVER DISEASE

The increased morbidity during the Second World War of gastritis, gastric and duodenal ulcers, gastroenteritis, diarrhoea, colitis, atrophy of the gastrointestinal tract, fatty infiltration of the liver, degeneration of the liver, cirrhosis, cholecystopathy, cholangitis and gallstone has been commented in a number of publications.

Among undernourished concentration camp inmates who died, autopsy revealed considerable pathological changes in the liver: Fatty infiltration, hyperemia, accumulation of pigment, lymphocyte infiltration, hemosiderosis, reduced glycogen store and massive atrophy. Such changes are rather in undernutrition were: diarrhoea, colitis, flatulence and protruding stomach. Diarrhoea was often a precursor to edema. During Famine, the incidence of gastric and duodenal ulcers and ulcerative colitis increases. Emotional tension is an important pathogenetic factor. Achylia and atonia with failing motor activity and stagnation of the content are frequent findings. Autopsy has revealed submucous hemorrhages, gastrointestinal ulcerations, thin walls in the gastrointestinal tract, and atrophy of the muscle layers of the gastrointestinal wall.

Consequently it seems likely that mental stresses have been of account for the rise in gastrointestinal disorders during the war. The same applied to the postwar period.

* * * * *

NEUROLOGICAL DISEASE DUE TO MALNUTRITION, J.H. Walter, M.D., Hospital for Tropical Disease, London Trans of Royal Society of Tropical Medicine & Hygiene 60:128-135, 1966

"...in 1796, Winterbottom...wrote that visual weakness...was well known...to result from an exclusive diet of rice..." "...Henry Strachan (1897) drew attention to a common syndrome of polyneuritis associated with an intolerable burning of the extremities and deterioration of vision due to retrobulbar neuritis, characterized by the development of central scotomata". "Kinnier Wilson in 1914, described the histopathological changes he had found in the central nervous systems of 13 pellagrims.." "This was followed by an important paper from Singapore by Landar and Pallister (1935) on ocular abnormalities...the defect in vision was preceded by inflammation at muco-cutaneous junctions and was often accompanied by neurological changes resembling subacute combined degeneration of the cord. (P-128) The syndrome continued to appear for many years after improvement of the diet had banished beriberi." (P-129)

"In 1937, Fitzgerald Moore... showed that this defect (optic atrophy)...was curable - provided that the retinal atrophy was not far advanced..." "Sydenstricker (1942) then showed...the muco-cutaneous lesions...were specific manifestations of a deficiency of riboflavin...(P-129)

"Beriberi: Polyneuritis or neuritic beriberi affects nerves in order of their relative length, the longest first; symptoms, therefore, invariably begin in the feet...when the sensory loss has reached the knees, tingling and "pins and needles" begin to be felt in the fingers and wrist drop and signs of ulnar nerve palsy appear...signs of cardiovascular damage may appear...the signs of high output failure." (P-129)

"...Since the damaged peripheral nerves have undergone demyelination, recovery is protracted and therapeutic supplements of vitamin do not appreciably speed the recovery of patients who are taking a good mixed diet." (P-130)

"The condition is commonly associated with glossitis, scrotal dermatitis and impaired vision, yet riboflavin is not curative, nor is thiamine."

"However, Martin (1958) who has noted this syndrome in patients suffering from viral hepatitis and cirrhosis, and has made autopsy findings on them, has noticed constant changes in the vasa nervorum, especially of the sciatic nerves. These vessels showed endothelial proliferation and chronic inflammation of the medial and adventitial coats..."

"The present conception, therefore, is that the burning feet syndrome is a neurovascular defect caused by a dietary deficiency of pantothenic acid (daily dose of 20 to 40 mg), or by factors which derange its metabolism."

"Wernick's encephalopathy, formerly thought to be a form of chronic alcoholic intoxication, has been shown by experience in several prisoner of war camps to be

a manifestation of the acute deprivation of thiamine".(P-130) "...deWardener and Lennox (1947)... "Cerebral beriberi". Prisoners began to develop symptoms within 6 weeks of capture at a time when the thiamine-non-fat-calorie ratio was much below the safe minimum level of 0.4 mg per 1000 non-fat calories; during this period neuritic and cardiovascular beriberi also began to appear."...Paresis of other cranial nerves may occasionally accompany oculoparesis.""

"Damage to the long tracts of the spinal cord constitutes one of the most important manifestations of nutritional neuropathy...The syndromes...closely resembling classical subacute combined degeneration of the cord."(P-131)

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PRISON-CAMP SYNDROME FOUND WIDESPREAD
Medical World News April 24, 1965 6:52-53

Permanent somatic and psychologic after effects--ranging from organic brain and atherosclerotic damage to loss of memory and inability to function--are now being found increasingly among the more than 500,000 U.S. citizens who suffered persecution and imprisonment Nazis and the Japanese during World War II. Studies in various world centers have also produced large-scale evidence of permanent and late sequelae that now affect prison-camp survivors.

While some physicians still maintain that protracted starvation and prolonged emotional stress produce no permanent physical or psychic damage, Dr. Ulrich Venzlaff of the University of Gottingen contends that "the results of experience in the camps of World War II have proved these doctrines untenable. We are dealing with serious psychic and somatic results of long-lasting extreme stresses."

At two recent meetings devoted to the late sequelae of massive traumatization, held at Detroit's Wayne State University and in New York City, Dr. Venzlaff reported on a study of the concentration-and-prison-camp condition known in Germany as Famine dystrophy, an illness whose major criterion is albumin insufficiency. Its victims show lowered blood pressure, pulse frequency, metabolic rate, and blood sugar levels plus leukopenia.

INTERRELATED DISORDERS DESCRIBED

"The decrease of plasma proteins, together with imbalances of the metabolism, lead to the characteristic edema," says Dr. Venzlaff. Atrophy of the stomach and intestinal mucous membrane produces digestive disorders and then a latent liver insufficiency through lack of proteins, frequently associated with non-jaundice liver disease. Of special significance is endocrine insufficiency, resulting from lack of essential amino acids. Disappearance of libido, amenorrhea, atrophy of ovaries and testes and hypothyroidism also occur.

"We therefore have to assume that survivors of a dystrophy who suffered complete apathy and had hallucinations also had gone through the cerebral complications of brain edema." The existence of these complications was confirmed by clinical and pneumoencephalographic tests performed in Germany after the war. Patients who experienced a severe and longlasting hunger dystrophy, especially when aggravated by heavy labor, infections, or trauma, were found to have brain atrophic changes with enlargement of the third ventricle.

Head beatings and severe bodily punishment in the Nazi camps were as prevalent as chronic hunger, according to a report recently filed with the West German Government by Dr. Jack Sheps, assistant professor of psychiatry at Columbia University. Dr. Sheps who has been treating former concentration camp inmates in New York for the past 15 years, declared that "the evidence is now clear that no restitution case can be dismissed as not linked to persecution unless some tests are done to disprove the possibility of brain damage.

"Organic cerebral damage with severe mental symptoms and personality changes, and severe diminution of work ability occur in professional boxers who have had many head injuries. Concentration-camp syndromes also resemble senility, cerebral arteriosclerosis, Alzheimer's disease, and other degenerative diseases of the brain."

Dr. Sheps warns that years may pass before "the signs and symptoms of classic organic brain damage appear."

Dr. Frantisek Blaha of Prague performed over 10,000 autopsies on prisoners who died during his own thress years as an inmate at Dachau. He discovered that while many of the younger prisoners had eaten no animal fats for years, atherosclerotic changes appeared without exception in all prisoners between ages 16 and 34 who died of hunger in the camp.

"Such findings amply prove that coronary heart disease in former prisoners of Nazi and Japanese terror camps must be the result of stress and strain during their internment," says Dr. Albert Haas, director of the respiratory detection and fatigue laboratory at the New York University Institute for Physical Medicine and Rehabilitation. The Hungarian-born doctor, who spent three years as a Nazi camp prisoner is currently making a five-year study of fatigue in former prisoners of the Nazis and the Japanese.

"There can be no doubt that premature senility and drastically diminished life spans are typical survivor syndromes," Dr. Haas says. "Thousands of women prisoners experienced premature menopause shortly after they were interned in the Nazi concentration camps. Their hormonal imbalance, linked to stress syndromes, was responsible for osteoarthritic changes.

"Hunger, physical strain, and the severe head and body injuries regularly inflicted upon us by our guards were responsible for marked biochemical changes in the vertebral body structure, leading to severe spondylosis, osteoporosis and consequent orthopedic deformities."

LASTING EFFECTS OF WAR

From current clinical experiences with camp survivors, Wayne State's Dr. Henry Krystal reports that most of them suffer a marked reduction in general levels of functioning and a pronounced tendency to insomnia or nightmares. He notes the appearance of sequelae even among the 250,000 persons now in the U.S. who lived in wartime Europe without being interned. Many of these, according to Dr. Krystal, now show the effects of the starvation, disease, stresses, and fears suffered during the years when they were forced to hide out.

The late psychic and somatic sequelae of starvation and total stress in Americans who were prisoners of war are now under investigation by the National Academy of Sciences. The first phase of continuing NAS study, conducted by Drs. Bernard M. Cohen and Maurice Z. Cooper in 1953, showed that American servicemen who were captured by the Germans in World War II emerged from prison in fairly normal condition.

On the other hand, 40% of the Americans captured by the Japanese died in the POW camps. The survivors of these camps were found to have a diminished life span and a much higher rate of hospitalization than normal, and 46% of them were unable to work more than 25 hours a week. The after-effects of POW experiences in Korea are to be included in the follow-up study.

NYU's Dr. Haas believes that many symptoms found in former camp prisoners today are either misinterpreted or overlooked in diagnosis. He urges physicians in private practice to acquire more information about the late sequelae of starvation & stress, so that they will be better able to recognize and manage these conditions.

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EFFECTS OF MALNUTRITION & OTHER HARDSHIPS ON THE MORTALITY AND MORBIDITY OF FORMER UNITED STATES PRISONERS OF WAR AND CIVILIAN INTERNEES OF WORLD WAR II: AN APPRAISAL OF CURRENT INFORMATION 84th Congress, 2d Session 1956 House Document 296 Pp.37-38 (Of interest--there were 18,745 Civilian Internees)

"A. KNOWN CONSEQUENCES OF DETENTION

Certain possible consequences of imprisonment are well recognized and, where a connection with prison hardships exists, its establishment as well as the diagnosis of the condition presents relatively little difficulty. Examples are tubercle bacillus japonica & other tropical diseases, hernias & certain psychoses and psychoneuroses.

Effects of certain dietary deficiencies which may be irreversible are perhaps less well recognized, but where attention is drawn to their occurrence, diagnosis and the establishment of a connection with prison hardships should present no great problem. Examples are optic atrophy, nerve deafness, central and peripheral neuritides, and the burning feet syndrome.

B. CONDITIONS PRESENTING DIFFICULTIES

The real problems involve disabilities or stated disabilities which are difficult or impossible to detect by objective measurements or tests, or which cannot be demonstrated to be a consequence of malnutrition or the type of hardships to which these people were exposed. These considerations apply particularly to the large body of complaints which are so frequent in both former prisoners of war and civilian internees—that is, complaints involving the central nervous system, such as nervousness, insomnia, excessive worry, inability to adapt to civilian life, inability to hold a job, nervous breakdown, poor memory or impaired mental efficiency and others, such as weakness and undue fatigue, vague gastrointestinal disorders, and low resistance to a variety of infections. Involved also are a group of diseases and conditions such as cancer, cardiovascular diseases, arthritis and accidents, which occur normally in an appreciable incidence in any population group. When such conditions develop in a former prisoner of war or internee, an obvious question of connection with imprisonment or internment develops.....

There are no advanced scientific or medical techniques known which would be expected to resolve all problems arising in questionable cases. Certain advanced research techniques are available which can be used to evaluate vitamin and general nutritional status of individuals who are suffering from active, current malnutrition. These techniques would be, however, completely useless in attempting to evaluate vitamin or general nutritional status in individuals who had suffered from active malnutrition 10 or more years previously. Some of these advanced techniques have been utilized in studying these individuals, some with a few months after liberation. No useful results were obtained. The only procedures which can be applied in these cases are those of the best medical practice, interpreted in the light of what is known concerning the sequelae and other consequences of internment or imprisonment in various groups. Admittedly, this involves considerable judgment, both in the medical evaluation and determination of "service connection" and in the disability evaluation. Some errors are inevitable. These may be in favor of, or to the detriment of, the claimant.

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BRAIN DAMAGE

Norwegian Concentration Camp Survivors edited by Axel Strom 1968 published by Humanities Press, New York

(Concerning encephalopathy.....in the majority of cases in our material the occurrence of encephalopathy has a definite correlation to the hardships suffered during imprisonment.

If we consider separately the different types of ill-treatment suffered in captivity, it is difficult to point out any special factor as the most important. However, head injury occupies a place of its own, and seems to be of the greatest importance. Of the 128 who suffered severe head injury during imprisonment 112 (88%) had definite encephalopathy. Of the 99 who had no head injury 71 (72%) had encephalopathy. This difference is statistically significant ($P > 0.01$)

Reviewing the following aspects of captivity, we could find no correlation to the occurrence of encephalopathy: Duration of imprisonment, degree of weight loss, occurrence of diarrhoea, oedema, typhus fever, and 'encephalitis'. This lack of correlation may partly be explained by the 'possible' or 'negative' encephalopathies which may actually contain several cases of encephalopathy (Tables 45 & 46), thus reducing the completely negative cases to a very small group.

A better impression of the relation between aspects of prison life and the state of health following the war is obtained if these aspects are separately correlated with clinical symptoms. In this way Eitinger & Askevold (Chapter VI) found that

torture, head injuries, and loss of weight showed a positive correlation to the appearance of the KZ syndrome. Loss of body weight also showed a correlation to intellectual deterioration.

Conclusions

After analyzing the possible causes of encephalopathy in the 184 former prisoners with a definite diagnosis we came to the following conclusions:

1. Encephalopathy could be attributed, in the great majority of cases, to the stresses suffered during imprisonment. A great number already had signs of nervous system disorders during captivity.

2. Head injuries, torture, severe undernutrition, and hard captivity conditions in general seemed to be important etiological factors. In most cases several factors probably worked together. The variation in the degree of encephalopathy seems to depend upon different combinations of hardships actually suffered and differences in the individual's reaction to these hardships.

3. In only 8 cases could the main cause of encephalopathy be attributed to diseases or injuries during the pre- or post-imprisonment period.

4. Contributory factors from periods before or after the war were demonstrated in less than one third of all cases. These factors were head injuries, anomalies, infections, alcoholism, and circulatory disturbances. Age in itself was probably not of decisive significance.

* * * * *

We are including the following research on tuberculosis because V.A. regulations state under 1307 (3.307) Presumptive service connection for chronic, tropical (or prisoner of war related)

3) Chronic Disease: the disease must have become manifest to a degree of 10 percent or more within 3 years (tuberculosis) from the date of separation from service.

Note the high rate of new cases of tuberculosis among survivors 16 years after liberation.

* * * * *

LATER EFFECTS OF IMPRISONMENT & DEPORTATION, International Conference Organized by the World Veterans Federation The Hague, November 20-25, 1961.

TUBERCULOSIS AMONG SURVIVORS IN 1960

The statistics published by the Israel Minister of Health in 1961 concerning fresh cases of tuberculosis recorded in 1960 reveal a higher rate of incidence among survivors than among the native population, even today, 16 years after liberation.

That statistics deal with evolutive pulmonary tuberculosis, stabilized pulmonary tuberculosis, and extra-pulmonary tuberculosis.....

In other words, in 1960 65.5% of fresh cases of tuberculosis of all types were accounted for by survivors, although the latter represent only 25% of the population.

We are obliged to conclude that this high rate of new cases of tuberculosis noted among survivors 16 years after the liberation is due to the later pulmonary effects of life in concentration camps.

The above taken from TUBERCULOSIS AMONG JEWISH IMMIGRANTS TO ISRAIL by Professor M. DVORJETSKI, Bar Ilan University, Tel Aviv.

"STRONGYLOIDIASIS"

WE FIRST BECAME ACQUAINTED WITH THE TERM "STRONGYLOIDIASIS" IN 1979 WHEN REPORTS STARTED COMING OUT OF AUSTRALIA INDICATING THAT EX-POW'S WHO WORKED ON THE BURMA/THAI RAILROAD WERE BEING DIAGNOSED AS INFESTED WITH "STRONGLOIDES STERCORALIS".

OBVIOUSLY FEW OF YOU, JUST AS I IN 1979, HAVE ANY IDEA OF WHAT "STRONGYLOIDES STERCORALIS" IS, SO I WILL TRY TO EXPLAIN, IN LAYMANS TERMS JUST WHAT "STRONGYLOIDES STERCORALIS" MEANS.

"STRONGYLOIDES STERCORALIS" OR JUST PLAIN "STRONGYLOIDES" AS I WILL REFER TO IT FROM NOW ON IS A WORM WHICH LIVES IN THE INTESTINES. UNLIKE OTHER INTESTINAL WORMS, HOOK-WORM OR ROUND WORMS WHICH DIE AFTER SEVERAL YEARS, "STRONGYLOIDES" LIVES IN THE INTESTINES FOR MANY YEARS.

IT HAS BEEN IN RECENT YEARS THAT THIS CONDITION HAS BEEN DISCOVERED, AND EFFECTIVE TREATMENT DEVELOPED.

THE PARASITE IS PECULIAR TO THOSE EX-POW'S FROM BURMA/THAILAND, TO A LESSER DEGREE THOSE FROM CHINA, PHILIPPINES, AND OTHER PARTS OF THE WORLD WHERE THERE IS A WARM CLIMATE.

I HAVE INDICATED WHAT "STRONGYLOIDES" IS, BUT WHY SHOULD WE BE CONCERNED ABOUT IT AND WHAT DANGERS ARE THERE EVEN IF ONE HAS IT?

INFESTATION CAN MANIFEST ITSELF IN MANY DIFFERENT SYMPTOMS, OR EVEN IN NO SYMPTOMS AT ALL. SOME OF THOSE INFECTED HAVE SUFFERED WITH A CREEPING ERUPTION OR RASH, SOME HAVE COMPLAINED OF ABDOMINAL AILMENTS SUCH AS DIARRHOEA OR INDIGESTION, AND SOME HAVE SHOWN AN INABILITY TO PUT ON WEIGHT, AND YET OTHERS HAVE COMPLAINED OF WEAKNESS, TIREDNESS, AND LACK OF ENERGY.

THERE IS A SIGNIFICANT DANGER WHEN "STRONGYLOIDES" IS PRESENT AND UNDIAGNOSED, AND A PERSON IS BEING TREATED WITH STEROIDS OR RADIOTHERAPY FOR OTHER AILMENTS. IN THESE INSTANCES THERE IS A DANGER OF HYPERINFECTION. ACCORDING TO A STUDY REPORTED IN THE BRITISH MEDICAL JOURNAL IN 1979, IT WAS INDICATED THAT "DEATHS FROM HYPERINFECTION MAY WELL HAVE OCCURRED IN THE PAST WITHOUT BEING DIAGNOSED WHEN STEROIDS HAVE BEEN GIVEN TO EX-POW'S WITH UNDIAGNOSED "STRONGYLOIDIASIS".

WE HAVE DISCUSSED WHAT "STRONGYLOIDES" IS AND WHAT DANGERS EXIST IN BEING INFESTED WITH THEM, BUT HOW CAN THEY BE DIAGNOSED, AND WHAT CAN BE DONE TO CURE THEM?

"STRONGYLOIDES" CAN BE DETECTED IN SEVERAL DIFFERENT WAYS. IN AUSTRALIA SAMPLES OF FLUID FROM THE UPPER PART OF THE INTESTINES IS EXAMINED. THIS FLUID IS OBTAINED BY HAVING THE PATIENT SWALLOW A CAPSULE WHICH CONTAINS A STRING COILED UP INSIDE IT. THE OTHER END IS STUCK TO THE CHEEK WITH TAPE, AND AFTER TWO HOURS THE STRING IS PULLED OUT AND EXAMINED UNDER A MICROSCOPE. HOWEVER, IN THE U.S., AND IN ENGLAND, STOOL SPECIMENS ARE COLLECTED AND EXAMINED. WITH THIS METHOD THE LABORATORY MUST BE SPECIFICALLY LOOKING FOR THE WORM OR IT CAN BE MISSED. ALSO, EVEN IF THE ORIGINAL FOUR STOOL SPECIMENS ARE FOUND TO BE NEGATIVE ADDITIONAL TESTS MUST BE MADE TO POSITIVELY RULE OUT INFESTATION.

"STRONGYLOIDES" CAN BE ERADICATED BY TREATMENT WITH A DRUG CALLED "THIABENDAZOLE". SOME SIDE EFFECTS HAVE BEEN REPORTED FROM THE USE OF "THIABENDAZOLE", AMONG WHICH ARE: NAUSEA VOMITING, DIZZINESS, RASH, VISION CHANGES, CONFUSION, OR LOW BLOOD COUNTS. HOWEVER, THESE SIDE EFFECTS ARE NOT COMMON AND EVEN WHEN ENCOUNTERED WELL WORTH THE INCONVENIENCE CONSIDERING THE CURE OF THE POTENTIALLY LIFE THREATENING "STRONGYLOIDES".

I FIRST BROUGHT THE CONDITION TO THE ATTENTION OF THE VETERANS ADMINISTRATION IN JULY 1980, BY REPORTING TO THE NEWARK NEW JERSEY REGIONAL OFFICE, AND THE EAST ORANGE NEW JERSEY MEDICAL CENTER, THE RESULTS OF THE STUDIES IN AUSTRALIA AND ENGLAND, AND REQUESTED THE TESTING OF AMERICAN EX-POW'S WHO HAD BEEN HELD CAPTIVE ON THE BURMA/THAI RAILROAD. THE NEWARK REGIONAL OFFICE REFERRED MY LETTER, PROPERLY I ASSUME, TO THE EAST ORANGE MEDICAL CENTER. I DID NOT RECEIVE THE COURTESY OF A WRITTEN RESPONSE TO MY WRITTEN REQUEST, BUT INSTEAD RECEIVED A PHONE CALL FROM A DOCTOR AT THE FACILITY WHO MADE IT QUITE CLEAR THAT THEY DIDN'T TAKE THE REPORT VERY SERIOUSLY, AND HAD NO INTENTION OF CALLING ANYONE IN FOR TESTING. AFTER SOME DISCUSSION HE DID ADMIT THAT IF I APPEARED AT THE FACILITY SUFFERING FROM SPECIFIC SYMPTOMS I WOULD BE ENTITLED TO AN EXAMINATION.

I WAS ALARMED BY THE NUMBER OF AUSTRALIAN AND BRITISH EX-POW'S WHO WERE FOUND TO BE INFESTED, AND FELT THAT IT WAS REASONABLE TO ASSUME THAT AMERICANS WHO WERE POW'S IN THE EXACT SAME AREA SHOULD ALSO BE INFESTED. I WANTED THE VETERANS ADMINISTRATION TO BE JUST AS CONCERNED AS I WAS, AND TREAT EVERY AMERICAN WHO WAS ON THE BURMA/THAI RAILROAD AS "SUSPECT", AND CALL US IN FOR TESTING. THERE ARE ONLY ABOUT 500 OF US ALIVE THROUGHOUT THE U.S., AND A SIMPLE STOOL SPECIMEN TEST CERTAINLY COULD NOT BE BUDGET BREAKING FOR THE VETERANS ADMINISTRATION.

OUR FIRST ENCOURAGEMENT CAME WHEN STAN SOMMERS AND HAROLD PAGE NOTIFIED ME THAT DR. L.L. PELLETIER, JR., CHIEF MEDICAL SERVICES AT THE MEDICAL CENTER IN AMERICAN LAKE, TACOMA WASHINGTON WAS CONDUCTING A STUDY OF EX-POW'S OF THE JAPANESE. HOWEVER THE INITIAL TESTS WERE TOTALLY NEGATIVE AS THE PARTICIPANTS WERE EX-POW'S FROM JAPAN AND THE PHILIPPINES, AND NO CASES OF "STRONGYLOIDES" WERE FOUND. THIS WAS A DISAPPOINTING BLOW TO ME AS I KNEW THEY HAD TESTED THE WRONG PEOPLE. THEN IN SEPTEMBER 1980 I WAS NOTIFIED BY HAROLD PAGE THAT DR. PELLETIER HAD RECEIVED PERMISSION FROM THE CENTRAL V.A. OFFICE TO CONDUCT A STUDY OF U.S.S. HOUSTON SURVIVORS, AND 131st. FIELD ARTILLERY MEMBERS. I WAS ASKED TO ASSIST IN THE STUDY BY SUPPLYING THE NAMES AND ADDRESSES OF THOSE EX-POW'S. I IMMEDIATELY SUPPLIED A LIST OF ALL U.S.S. HOUSTON SURVIVORS, AND REFERRED DR. PELLETIER TO CRAYTON GORDON OF THE 131st FIELD ARTILLERY WHO SUPPLIED THOSE NAMES AND ADDRESSES. (STRONGYLOIDES HAVE SINCE BEEN FOUND IN EX-POW'S FROM CHINA AND THE PHILIPPINES.)

SINCE THAT TIME TESTS HAVE BEEN MADE AND THE RESULTS ARE STARTLING. AS OF JUNE 26, 1981, SPECIMENS FROM 88 OF US HAVE BEEN EXAMINED AND 37 DOCUMENTED CASES OF "STRONGYLOIDES" HAVE BEEN UNCOVERED. ALL THOSE FOUND TO BE INFESTED HAVE BEEN REFERRED TO THEIR LOCAL V.A. CENTERS FOR TREATMENT.

DR. PELLETIER INDICATED THAT HE EXPECTS TO FIND ABOUT THE SAME TOTAL OF CASES AS IN ENGLAND AND AUSTRALIA, HOWEVER, FROM THE RESULTS TO DATE OUR AVERAGE OF POSITIVE CASES EXCEEDS THOSE FOUND IN ENGLAND AND AUSTRALIA. DR. PELLETIER HAS REPORTED THAT HIS "PLAN OF ACTION" IS TO OBTAIN STOOL SPECIMENTS FROM THOSE MOST LIKELY TO HAVE THE DISEASE, SO WE WILL HAVE A HIGH YIELD AND PROVE THAT "STRONGYLOIDES" IS PRESENT IN OUR MEN. THEN WE WILL CONVINCE THE V.A. CENTRAL OFFICE TO CONDUCT A COMPREHENSIVE SURVEY INVOLVING A NUMBER OF V.A. CENTERS IN DIFFERENT PARTS OF THE COUNTRY.

WE DEEPLY APPRECIATE THE INTEREST OF DR. PELLETIER, AND MANY OF US WILL HAVE A LIFE THREATENING DISEASE CURED BECAUSE OF HIS WORK, AND WE PRAY THAT HIS EFFORTS CULMINATE IN THE TESTING OF ALL OF US FROM THE BURMA/THAILAND AND THE PACIFIC.

AS A LAYMAN I WOULD THINK THAT MY GOVERNMENT SHOULD BE CONCERNED IF EVEN JUST ONE EX-POW MIGHT BE INFESTED WITH THIS PARASITE, EVEN AFTER ALL THESE YEARS, BUT TO HAVE ONE OF THEIR OWN DOCTORS DISCOVER 37 OUT OF THE FIRST 88 TESTED SEEMS TO ME ENOUGH EVIDENCE TO CALL ALL U.S.S. HOUSTON SURVIVORS AND 131st FIELD ARTILLERY MEMBERS IN FOR TESTING.

TIME WILL TELL HOW FAST THE V.A. REACTS TO THIS PROBLEM, AND I WONDER IF ANY OF OUR MEN DIED FROM HYPERINFECTION IN THE PAST, AND WORSE YET, WILL ANY DEATHS OCCUR IN THE FUTURE EVEN THOUGH THERE IS SUFFICIENT EVIDENCE TO INDICATE THAT THIS POSSIBILITY EXISTS.

OTTO C. SCHWARZ, Life Member No. 3528
Member, National Medical Research Committee

EYE SIGHT AND HEARING

Department of the Army, Office of the Surgeon General, Washington D.C. 20314. Malnutrition and Deficiency Diseases Page 167, Personal Health Measures & Immunization. Pg.168 & 169

PRISONERS OF WAR: The greatest incidence of evident nutritional deficiency disease occurred in recovered Allied prisoners of war and in civilians of liberated and conquered countries.....

Experimental studies as well as clinical observations suggest that the characteristics of deficiency disease resulting from relatively acute and chronic deficiency states vary considerably. This difference may be illustrated by some unusual features of the cases of thiamine deficiency from the Pacific. Among these, there occurred an unusual and unexpected number with evidence of involvement of the second (optic) and eighth (acoustic) cranial nerves. Involvement of the optic nerve in thiamine deficiency had only rarely been observed and reported previously. The writer has seen two cases, apparently of this kind, with atrophy of the nerve head and at certain stages an optic neuritis characterizing the findings. While some doubt has existed as to the etiology, and a suspicion of a toxic optic neuritis from methanol poisoning existed in some, this does not seem to be an entirely adequate explanation. There is, furthermore, the theoretical possibility that a primary thiamine deficiency may have predisposed and conditioned to an effect of methanol which would otherwise not have occurred. The cases in civilian life observed by the writer occurred in chronic alcoholics. So far the condition has remained stationary in most of these subjects with little or no evidence of improvement in function and no change in the morphologic appearance. Unfortunately, a variety of treatment and modification of the nutritional condition before studies were begun to determine the nutritional status and possible etiology made later studies essentially valueless.

Much the same situation occurred in those subjects with involvement of the eighth nerve. Deafness, partial or nearly complete, of a "nerve" type, with little tendency to improve was the principal finding.

* * * * *

EYES

The following was taken from the Canadian Pension Commission Medical Guidelines, May 7, 1976 which was authored by Dr. H.J. Richardson, the former Chief Medical Advisor of the of the Commission. (Ec-Prisoners of War) Hong Kong.

Ocular - Permanent optic atrophy with non-progressive central scotomata, some peripheral field loss and increased susceptibility to glaucoma because of scar tissue are accepted. Temporary weakness of ocular muscles affecting accommodation and convergence was noted but disappeared by 1946 - 17. The degree of permanent optic atrophy was thought to be non-progressive once normal nutrition and metabolism were established. Deterioration of vision and of the optic atrophy from other causes may occur subsequently with an apparent progression of the optic atrophy in the recent past. Due to the difficulty in precisely identifying these other causes, acceptance of some deterioration of the optic atrophy may be necessary in the assessment. Spectacles are provided by D.V.A. Treatment Services at no charge.

Specific Areas of Consequential Rulings

Ocular - Glaucoma and cataract, when diagnosed, require ruling to determine whether and to what degree they may be related to Avitaminosis.

* * * * *

HEARING AND TINNITUS(A subjective ringing or thinking sound in the ear)(names & dates not given)

On about___the veteran suffered the fragmentation wound from a booby trap explosion. On service entrance examination of___hearing was normal in all but 4,000 range. On discharge examination of___a diagnosis is shown of hearing loss particularly in the high frequency, moderately severe, bilaterally. Service medical records show no complaint or treatment for hearing, and ear condition or tinnitus.

Special ENT examination of___,performed by your facility,fiagnosis:(1)deafness,sensori-neural type,bilateral,due to post acoustic trauma:(2)tinnitus aurium,subjective,dueto No.1.

Effective___the rating schedule has assigned a compensable evaluation for tinnitus (persistent as a symptom of head injury, concussion or acoustic trauma).

EYES

LATER EFFECTS OF IMPRISONMENT & DEPORTATION, World Veteran Federation, Hague, 1961.
Presented by J.N. Crawford, M.D., Director General, Treatment Services, Ministry
of War Veterans, Canada.

.....QUITE INTENSIVE STUDY HAS BEEN GIVEN TO A GROUP OF ABOUT 1400
CANADIAN SOLDIERS WHO WERE REPATRIATED FROM PRISON CAMPS IN HONG KONG AND JAPAN.
CRAWFORD AND REID (1) REPORTED ON THE CLINICAL SYNDROME WHICH APPEARED IN THIS GROUP,
AS A RESULT OF STARVATION, HARD LABOR AND SEVERE SYSTEMIC INFECTION DURING INTERNMENT.
OF PARTICULAR IMPORTANCE IN THIS SYNDROME WERE CHANGES IN THE OPTIC NERVE AND IN
PERIPHERAL NERVES AND IN POSTERIOR ROOTS AND POSTERIOR COLUMNS OF THE SPINAL CORD....

THE REPORTED VISUAL DEFECTS WERE THE CAUSE OF PARTICULAR INTEREST IMMEDIATELY FOLLOW-
ING REPATRIATION. BELL AND O'NEILL (4) EXAMINED 560 CASES AND REPORTED A 20% INCIDENCE
OF PARTIAL OPTIC ATROPHY. THE MORE SEVERE CASES SHOWED A DEFECT IN THE CENTRAL VISUAL
FIELD WITH FAIRLY GOOD PERIPHERAL VISION. LETARTE AND SIMARD (5) REPORTED SIMILAR
FINDINGS IN 67 CASES. CRAWFORD (6) AND ADAMSON AND JUDGE (7) HAVE REPORTED THAT THE
INCIDENCE OF OPTIC NEUROPATHY IN THE GROUP HAD NEITHER INCREASED NOR DECREASED FIVE
AND TEN YEARS FOLLOWING REPATRIATION. BAIRD AND MACDONALD (8) STUDIED 54 CASES WITH
OPTIC NEUROPATHY TEN YEARS AFTER REPATRIATION AND REPORTED THAT THE LESIONS HAD
NEITHER IMPROVED OR WORSENE.....

THE PATHOLOGICAL CHANGES WHICH HAVE OCCURRED IN NERVOUS TISSUE HAVE BEEN WELL DESCRIBED
BY FISHER (11) WHO EXAMINED AUTOPSY MATERIAL FROM 11 CASES.....IN FOUR CASES THE OPTIC
NERVES DEMONSTRATED DAMAGE TO THE PAPILOMACULAR BUNDLE.....

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5. LETARTE, F. & SIMARD, P., VISUAL COMPLAINTS FROM HONG KONG REPATRIATES D.V.A.
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MEDICAL SERVICES JOURNAL, CANADA, NOV. 1956.
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WAR AFTER TEN YEARS, MEDICAL SERVICES JOURNAL, CANADA, JUNE 1956.
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WAR BY THE JAPANESE, MEDICAL SERVICES JOURNAL, CANADA, MARCH 1955.

PREMATURE AGING

EXCERPTS FROM AXEL STROM, M.D., NORWEGIAN CONCENTRATION CAMPT SURVIVORS. NEW YORK HUMANITIES PRESS. Pp 36-37, 1968.

BEFORE WE EXAMINE MORE CLOSELY THE DIFFERENT TYPES OF ILL-HEALTH SEEN IN THESE PATIENTS (EX-PRISONERS) THERE IS ONE SYNDROME WHICH MUST BE MENTIONED: PREMATURE AGING. THIS SYNDROME HAS BEEN EMPHASIZED IN A NUMBER OF EARLIER INVESTIGATIONS (e.g. Targowla 1955, Fichez & Klotz 1961, Schenck 1961), AND MANY REGARD IT AS THE CHARACTERISTIC FEATURE OF THE AFTER-EFFECTS OF CONCENTRATION CAMP IMPRISONMENT. 'WHILE ONE YEAR IN WAR AGES A MAN AS MUCH AS TWO YEARS OF PEACE, A YEAR IN CONCENTRATION CAMP PUTS AT LEAST FOUR YEARS ON HIS AGE.' (FICHEZ & KLOTZ 1961). SEVERAL WRITERS HAVE POINTED OUT THAT PEOPLE WHO HAVE BEEN IN CONCENTRATION CAMPS LOOK AT LEAST 10 YEARS OLDER THAN THEY REALLY ARE. THIS IS TRUE BOTH OF THEIR APPEARANCE AND OF THEIR PHYSICAL AND MENTAL EFFICIENCY. UNDERNOURISHMENT, HEAVY LABOR, THE APPALLING CONDITIONS IN THE CAMPS AS WELL AS THE STRESS OF PERPETUAL ANXIETY AND FEAR ARE REGARDED AS THE MOST IMPORTANT ETIOLOGICAL FACTORS.

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FROM A HEARING BEFORE A SUBCOMMITTEE OF THE COMMITTEE ON VETERAN' AFFAIRS, HOUSE OF REPRESENTATIVES, H.R. 8848 - 81st CONGRESS - 2nd SESSION - SEPTEMBER 15, 1950.

THE HEARING WAS TO PROVIDE FOR A STUDY OF THE MENTAL AND PHYSICAL SEQUELAE OF MALNUTRITION AND STARVATION SUFFERED BY PRISONERS OF WAR AND CIVILIAN INTERNEES DURING WORLD WAR II. TESTIMONY WAS GIVEN BY MANY MEDICAL MEN, PHYSICIANS WHO WERE PRISONERS OF WAR AND OTHERS WHO WERE NOT BUT WHO WERE AUTHORITIES IN THE FIELD OF EFFECTS OF STARVATION, MALNUTRITION AND AVITAMINOSIS. I SHALL QUOTE VERY BRIEFLY FROM TESTIMONY. ON PAGE 1843 - "IT IS MY OPINION THAT THEIR DURATION OF LIFE WILL BE PROBABLY 10 to 15 YEARS LESS THAN THAT OF THE GENERAL POPULATION. THIS DUE TO THE FACT OF MULTIPLE DEFICIENCIES AND THE LONG-TIME EFFECTS OF TROPICAL DISEASES AND INTESTINAL INFESTATIONS.

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EXCERPTS FROM ARVE LØNNUM, M.D., DELAYED DISEASE AND ILL-HEALTH, THE NORWEGIAN ASSOCIATION OF DISABLED VETERANS Pp 86-87-88, 1969.

PAUL (293) HAS CONTRIBUTED WITH AN EXCELLENT SURVEY OF THE LITERATURE ON THIS SUBJECT. ALSO THIS AUTHOR STRESSES THAT THE BEST CRITERION FOR PREMATURE AGING IS THE GENERAL APPEARANCE AND, IN ADDITION, THE CONDITION OF THE SKIN, HAIR AND CIRCULATORY ORGANS. FURTHER CHARACTERISTICS OF ACCELERATED AGING ARE PREMATURELY DEPLETED RESOURCES, REDUCED YIELDING CAPACITY, AND PREMATURE OCCURRENCE OF DISEASES USUALLY ASSOCIATED WITH A MORE ADVANCED AGE. PREMATURE AGING IS LIKewise RELATED TO PREMATURE DEATH. ON THIS BASIS, PAUL POSED THE QUESTION OF WHETHER THE PENSIONING AGE SHOULD NOT BE LOWERED FOR PERSONS WHO HAD BEEN EXPOSED TO EXTREME STRESSES DURING THE WAR.

PAUL PERSONALLY EXAMINED 50 PATIENTS EXPOSED TO THE HARDSHIPS OF ILLEGALITY AND DEPORTATION. ON EXAMINATION, 33 OF THESE BELOW 50 YEARS OF AGE. THERE WERE SIGNS OF PREMATURE REDUCTION OF THE INTELLIGENCE, SPECIALLY MARKED IN THE YOUNGEST PATIENTS. PROMINENT FEATURES WERE: REDUCED CREATIVE POWER, DECREASED ELASTICITY, AND INCREASED TENDENCY TO PERSERVATION . PAUL TERMED THIS "ASYNKRONE PSYCHISCHE VORALTERUNG" (ASYNCHRONOUS PREMATURE AGING), A CONDITION THAT IS ACCOMPANIED BY MARKED TENSENESS AND ANXIETY BECAUSE THE PATIENTS FAIL COMPLETELY IN SOME FIELDS WHILST THE PERSONALITY IS RELATIVELY INTACT IN OTHER RESPECTS.

AMONG WAR-CONDITIONED CAUSES FOR THE ACCELERATED AGING PAUL INDICATED INFECTIOUS DISEASES AS SPOTTED FEVER, TYPHOID FEVER, DYSENTERY, AND HEPATITIS, WHICH MANY MAY HAVE HAD WITHOUT BEING AWARE OF IT. ATROPHY OF THE GASTRO-INTESTINAL TRACT CAN BE ACCOMPANIED BY METABOLIC DEFECTIVE ABSORPTION STATES WHICH MAY HASTEN THE AGING PROCESSES. SUMMATION OF PSYCHIC TRAUMAS MAY HAVE CONTRIBUTED AND PAUL ALSO DISCUSSED PREMATURE AGING FOLLOWING SOLITARY CONFINEMENT AND ILLEGALITY. HE FURTHER MENTIONED THE CONTINUOUS STRESS SITUATION DURING THE POSTWAR PERIOD, THUS THE STRESS CAUSED BY THE NEGATIVE ATTITUDE OF THE AUTHORITIES TO APPLICATIONS FOR FINANCIAL AID. DURING THE POSTWAR PERIOD REPEATED MENTAL TRAUMAS - e.g. NIGHTMARES AND A FEELING OF FAILURE IN THE

WORK SITUATION - HAVE FREQUENTLY BEEN COMBINED WITH SIGNS OF BRAIN DAMAGES AND INFECTIOUS DISEASES.

HERBERG (181) FOUND THAT THE FOLLOWING WAR STRESSES WERE OF POSSIBLE SIGNIFICANCE FOR THE ACCELERATED AGING: UNDERNUTRITION, INFECTIOUS DISEASES, COLD, EXCESSIVELY STRENUOUS WORK, AND DURATION OF THE CAPTIVITY. LOSS OF HOME AND FAMILY LIKewise ENTERED. HERBERG BASED THE DIAGNOSIS OF PREMATURE AGING ON: 1) GENERAL IMPRESSION, 2) PSYCHOLOGIC TESTS, AND 3) STATE OF THE CIRCULATORY ORGANS.

ALSO SCHENCK FOUND PREMATURE AGING IN A LARGE NUMBER OF GERMAN EX-PRISONERS. HE ASSUMED ACCELERATED AGE CHANGES TO BE PRESENT IN THE BRAIN, AMONG OTHER THINGS. SCHENCK DISTINGUISHED BETWEEN A "GESAMT-VORALTERUNG" (OVERALL PREMATURE AGING) AND A "TEIL-VORALTERUNG" (PARTIAL PREMATURE AGING) AFFECTING SEPARATE ORGANS ONLY. SCHENCK LATER ANALYSED A MORE COMPREHENSIVE MATERIAL COMPRISING 2000 EX-PRISONERS AND FOUND THAT 18.4 PERCENT OF THESE WERE PREMATURELY AGED. HE FOUND A POSITIVE CORRELATION BETWEEN THIS AND DURATION AND SEVERITY OF THE CAPTIVITY.

PREMATURE AGING IN CONCENTRATION CAMP SURVIVORS HAS LIKEWISE BEEN MENTIONED IN REPORTS FROM MANY OTHER COUNTRIES. ACCORDING TO STROM, PREMATURE AGING HAS UNDOUBTEDLY BEEN PRESENT IN MANY NORWEGIAN EX-PRISONERS, BUT AT THE OUTSET THIS PHENOMENON WAS NOT SYSTEMATICALLY RECORDED. THEREFORE EXACT FIGURES ARE NOT AVAILABLE IN THIS COUNTRY.

IN THE NORWEGIAN EX-PRISONERS, HOWEVER, ENCEPHALOPATHY WAS FOUND TO BEAR CORRELATION TO THE AGE. THE ENCEPHALOPATHY AS SUCH MAY BE PROGRESSIVE, OR DISEASES ASSOCIATED WITH ADVANCING AGE MAY RESULT IN PROGRESSION OF THE ENCEPHALOPATHY. BUT A NORMAL AGE INVOLUTION MAY LIKEWISE REPRESENT THE ADDITIONAL FACTOR WHICH INTENSIFIES THE SYMPTOMS OF THE ENCEPHALOPATHY AS THE YEARS GO BY. THE FACT IS THAT WITH ADVANCING AGE ORDINARY INVOLUTIONAL CHANGES ADD THEMSELVES TO ALREADY EXISTING, OFTEN LATENT, PATHOLOGICAL CHANGES IN THE BRAIN. THIS CAN RESULT IN VERY MARKED SYMPTOMS. LASTLY, WHEN THE PATIENTS ARE AT THE LIMIT OF THEIR CAPACITY, THE AGE MAY REPRESENT THE LAST STRAW THAT BREAKS THE CAMEL'S BACK, AND THIS MAY GIVE AN APPEARANCE OF PROGRESSION OF THE ENCEPHALOPATHY.

ALSO THE DEGENERATIVE CHANGES OF THE SPINAL COLUMN PRESENTED BY NORWEGIAN CONCENTRATION CAMP SURVIVORS HAVE PROBABLY BEEN FAR MORE PRONOUNCED THAN WHAT COULD HAVE BEEN EXPECTED ACCORDING TO THE CHRONOLOGICAL AGE.

IN DENMARK, PREMATURE AGING HAS BEEN COMMENTED BY HERMANN & THYGESEN. THE SAME PHENOMENON HAS BEEN REPORTED IN CZECHOSLOVAKIA AND IN POLAND. FROM FRENCH QUARTERS THERE HAVE APPEARED NUMEROUS PUBLICATIONS AND MONOGRAPHS ON THIS TOPIC.

IN ISRAEL, KLEIN et al EXAMINED 50 PATIENTS FROM EUROPEAN CONCENTRATION CAMPS, GHETTOS, AND ANNE FRANK SITUATIONS AND COMPARED THESE WITH 40 OTHER JEWS WHO HAD IMMIGRATED TO ISRAEL. THE AUTHORS WERE STRUCK BY THE PREMATURE AGING IN THE FORMER GROUP.

IN THE UNITED STATES, WOLFF, ON THE BASIS OF EXPERIENCES FROM JAPAN & KOREA, DREW THE CONCLUSION THAT MULTIPLE NOXIOUS FACTORS HAD CAUSED PREMATURE AGING IN FORMER PRISONERS.

THERE IS HARDLY ANY DEFINITE PROOF THAT UNDERNUTRITION ALONE CAN LEAD TO ACCELERATED AGING. EVEN SO CERTAIN FINDINGS OF THE MINNESOTA-EXPERIMENT APPEAR TO SUGGEST ACCELERATED AGING, e.g. IN THE INTERVERTEBRAL DISCS (223). HOWEVER, IN MOST WORKS ON CONCENTRATION CAMP INMATES THE UNDERNUTRITION IS NOT INDICATED AS THE SOLE RESPONSIBLE FACTOR. WHAT SEEMS TO HAVE BEEN DECISIVE IS THE CUMULATIVE EFFECT OF COMPLEX AND PROTRACTED STRAINS AND STRESSES.

IRREFUTABLE STATISTICAL EVIDENCE TO THE EFFECT THAT PREMATURE AGING OCCURS IN FORMER PRISONERS IS HARD TO FURNISH SINCE MOST AUTHORS HAVE HAD ACCESS TO SELECTED GROUPS OF PATIENTS ONLY. BUT THIS DOES NOT EXPLAIN AWAY THE INFERENCES ARRIVED AT BY EXPERIENCED CLINICIANS AFTER EXAMINING LARGE GROUPS OF FORMER PRISONERS OF WAR.

PERIPHERAL VASCULAR DISEASES DUE TO EXPOSURE TO COLD (500)

EXPOSURE TO COLD INDUCES VASOCONSTRICTION BY A DIRECT ACTION ON BLOOD VESSELS AND ALSO BY REFLEX SYMPATHETIC NERVOUS SYSTEM ACTIVITY. COLD APPLICATION TO THE FOREHEAD OR TO ONE EXTREMITY STIMULATES VASOCONSTRICTION IN ALL EXTREMITIES. THE DECREASED BLOOD FLOW AND LOCAL ANOXIA MAY LEAD TO TISSUE DAMAGE, DEPENDING ON THE DEGREE AND DURATION OF EXPOSURE AND THE SUSCEPTIBILITY OF THE PATIENT.

EVEN BRIEF EXPOSURE TO NONFREEZING COLD IS FOLLOWED IN SENSITIVE PERSONS BY AN EXAGGERATED AND PROLONGED TYPE OF REACTIVE VASODILATATION, LOW-GRADE EDEMA, AND TINGLING PAIN. SIMILAR EXPOSURE IN MORE SUSCEPTIBLE PATIENTS PRODUCES PRONOUNCED EDEMA OF THE ANGIONEUROTIC OR URTICARIAL TYPE ON EXPOSED AREAS: EVEN MUCOUS MEMBRANES MAY BE INVOLVED ON INGESTING COLD SUBSTANCES. A SYSTEMIC REACTION WITH INCREASED PULSE RATE, DECREASED BLOOD PRESSURE, FLUSHING OF THE FACE, AND EVEN SYNCOPE MAY ACCOMPANY THE EDEMA. FOLLOWING SWIMMING IN COOL WATER, THIS REACTION HAS PROVED FATAL IN SOME INSTANCES. A HISTAMINE-LIKE SUBSTANCE HAS BEEN SHOWN TO BE RELEASED AND IS MEASURABLE IN THE URINE IN ABOUT 50% OF PATIENTS. DIAGNOSIS IS MADE BY EXPOSURE OF A HAND OR ARM TO 12 TO 14 C. (53 TO 57 F) WATER; EDEMA WILL DEVELOP DURING OR AFTER EXPOSURE. ANTIHISTAMINES MAY BE OF USE IN THE TREATMENT OF COLD SENSITIVITY, BUT PROTECTION OF THE PATIENT FROM COLD EXPOSURE IS MOST IMPORTANT.

CHILBLAIN AND PERNIO

..IN SOME PATIENTS EXPOSED REPEATEDLY TO COLD, RECURRENT AND CHRONIC LESIONS, OFTEN APPEARING IN CROPS, MAY DEVELOP. THE LESIONS ARE ERTHEMATOUS AND ULCERATIVE AND MAY LEAVE RESIDUALS SCARRING, FIBROSIS, AND ATROPHY OF THE SKIN AND SUBCUTANEOUS TISSUES. THE DISEASE IS MORE ACTIVE DURING THE COOLER MONTHS AND SUBSIDES IN WARM WEATHER. BILATERAL AND SYMMETRICAL PARTS OF THE EXTREMITIES ARE INVOLVED. THIS STATE IS CALLED CHRONIC CHILBLAIN OR PERNIO (ERTHROCYANOSIS FRIGIDA CRURUM).

COLD INJURY AND HYPOTHERMIA (502)

IN WARFARE, COLD HAS BEEN OF PRIME CONCERN AS THE MOST DISABLING ENVIRONMENTAL STRESS. IN KOREA DURING THE WINTER OF 1950-1951, THERE WERE APPROXIMATELY 8,000 INJURIES DUE TO COLD; ABOUT TWO-THIRDS OF THESE WERE EVACUATED TO JAPAN AND THE UNITED STATES FOR CONTINUED TREATMENT. EXPOSURE TO BOTH WET AND DRY COLD, NOT ONLY OF GROUND TROOPS BUT ALSO OF AVIATORS AND SHIPWRECK SURVIVORS, EMPHASIZES THE IMPORTANCE OF PROTECTION, PARTICULARLY OF HANDS AND FEET AND OF ACCLIMATIZATION.

IN BIOLOGY AND MEDICINE, DYNAMIC PROGRESS HAS BEEN MADE IN CRYBIOLOGY AND IN APPLICATIONS OF HYPOTHERMIA IN SURGERY AND IN THERAPY. HYPOTHERMIA COMBINED WITH DYPERBARIC OXYGENATION SHOWS PROMISE OF ELIMINATING COMPLICATIONS ARISING FROM HYPOXIA.

THE TEMPERATURE RANGES OF CONCERN ARE (1) VERY LOW TEMPERATURES, OFTEN ASSOCIATED WITH FREEZING OF SOME WATER IN TISSUES, (2) HYPOTHERMIC TEMPERATURES WHICH ARE IN THE RANGE OF A FEW DEGREES ABOVE FREEZING TO A LEVEL BELOW DEEP BODY TEMPERATURE, AND (3) REDUCED TEMPERATURES WHICH ARE COMPENSATED FOR BY PHYSIOLOGIC ADJUSTMENTS. AT FREEZING AND HYPOTHERMIC LEVELS, COLD INJURY EMBRACES FROSTBITE AND IMMERSION FOOT.

LOCAL COLD INJURY

DIRECT AND INDIRECT MECHANISMS OF INJURY. FROSTBITE AND OTHER LESIONS DUE TO COLD HAVE BEEN INTENSIVELY STUDIED IN MAN AND ANIMALS BUT THE RESULTS OF THESE INVESTIGATIONS HAVE NOT RESOLVED CONTROVERSIES IN REGARD TO UNDERLYING PATHOLOGY AND THERAPEUTIC MEASURES. MECHANISMS OF FREEZING INJURY CAN BE SEPARATED INTO PHENOMENA WHICH AFFECT CELLS AND EXTRACELLULAR FLUIDS (DIRECT EFFECTS) AND THOSE WHICH DISRUPT THE FUNCTION OF ORGANIZED TISSUES AND INTEGRITY OF CIRCULATION (INDIRECT EFFECTS).

CERTAIN DIRECT EFFECTS HAVE BEEN DELINEATED WITH UNEQUIVOCAL CLARITY. WHEN TISSUE FREEZES, ICE CRYSTALS FORM, AND CONCOMITANTLY, SOLUTES IN THE RESIDUAL LIQUID BECOME CONCENTRATED. IT IS CLEAR FROM A STUDY OF A HISTOLOGIC SECTION OF TISSUE FIXED WHILE FROZEN TO PRESERVE DISTORTION BY ICE CRYSTALS THAT THE PHYSICAL DISLOCATION DURING SLOW FREEZING IS EXTREME. ICE CRYSTALS MANY TIMES THE SIZE OF INDIVIDUAL CELLS FORM, BUT ONLY IN THE EXTRACELLULAR SPACES. THERE IS AMPLE EVIDENCE THAT LARGE ICE CRYSTALS CAN DEVELOP

BETWEEN CELLS IN SOFT TISSUE WITHOUT PRODUCING IRREVERSIBLE INJURY AS LONG AS THE PERCENTAGE OF WATER FROZEN DOES NOT EXCEED A CRITICAL AMOUNT..... OF PRIME IMPORTANCE CLINICALLY IS THE OBSERVATION THAT TRAUMA INDUCED BY BENDING A FROZEN EXTREMITY RESULTED IN LESIONS WHICH GROSSLY AND MICROSCOPICALLY RESEMBLE FROSTBITE IN MAN.

A MAJOR SOURCE OF DAMAGE TO LIVING CELLS DURING FREEZING AND THAWING APPEARS TO BE THE DELETERIOUS EFFECT OF STRONG SALT SOLUTIONS WHICH DEVELOP DURING FORMATION AND DISSOLUTION OF ICE; CHANGES IN THE PROPORTIONS OF LIPIDS & PHOSPHOLIPIDS IN THE CELL MEMBRANE ARE ALSO OF GREAT IMPORTANCE. THE DISCOVERY OF THE PROTECTIVE VALUE OF SUCH SUBSTANCES AS GLYCEROL AND DIMETHYLSULFOXIDE, WHICH ENTER CELLS & PREVENT FREEZING INJURY DURING COMPARATIVELY SLOW COOLING TO & REWARMING FROM LOW TEMPERATURES, REPRESENTS A SIGNIFICANT ADVANCE.....

TURNING NOW TO THE INDIRECT EFFECTS OF COLD ON ORGANIZED TISSUE, VASCULAR STASIS AND ENSUING DERANGEMENTS APPEAR TO BE THE MAJOR CAUSE OF TISSUE INJURY. THERE IS ABUNDANT EXPERIMENTAL EVIDENCE THAT THE FULMINATING VASCULAR REACTION AND STASIS WHICH SUPERVENE ARE ASSOCIATED WITH PRODUCTION OF HISTAMINE LIKE SUBSTANCES WHICH INCREASE THE PERMEABILITY OF THE CAPILLARY BED. WITHIN BLOOD VESSELS, CELLULAR ELEMENTS AGGREGATE. IRREVERSIBLE OCCLUSION OF SMALL BLOOD VESSELS BY CELL MASSES HAS BEEN DEMONSTRATED IN THAWED TISSUE FOLLOWING FREEZING INJURY. STRUCTURAL DAMAGE OF THE FROZEN TISSUE SIMULATES DAMAGE PRODUCED BY BURNS.

CLINICAL CONSIDERATIONS. LOCAL COLD INJURY MAY BE DIVIDED INTO FREEZING (FROSTBITE) & NONFREEZING (IMMERSION FOOT) INJURIES. THE TWO TYPES MAY BE OBSERVED IN THE SAME EXTREMITY OR IN DIFFERENT EXTREMITIES IN THE SAME INDIVIDUAL, E.G., TRENCH FOOT, FREEZING OF THE HANDS AND NONFREEZING OF THE FEET OF SHIPWRECK SURVIVORS. IT IS IMPORTANT TO RECOGNIZE DIFFERENCES IN CLINICAL APPEARANCE, SIGNS AND SYMPTOMS; UNDERLYING PATHOLOGIC DERANGEMENTS; AND SEQUELAE OF THE TWO ENTITIES WHICH MAY REQUIRE DIVERGENT COURSES OF THERAPY. THE DIAGNOSIS OF FREEZING VERSUS NONFREEZING INJURY CAN BE MADE GENERALLY ON THE BASIS OF HISTORY AND CLINICAL MANIFESTATIONS.

IMMERSION FOOT (IMMERSION FOOT IS DUE TO PROLONGED EXPOSURE OF THE EXTREMITIES TO WATER; SYNDROMES CHARACTERIZED BY ONLY PAINFUL, SWOLLEN FEET OR HANDS TO THE MORE SERIOUS MANIFESTATIONS OF MUSCLE NECROSIS, ULCERATION, AND GANGRENE MAY RESULT.)

IN THIS ENTITY, OBSERVED IN SHIPWRECK SURVIVORS OR IN SOLDIERS (TRENCH FOOT) WHOSE FEET HAVE BEEN WET BUT NOT FREEZING COLD FOR PROLONGED PERIODS, THERE IS PRIMARILY INJURY TO NERVE & MUSCLE TISSUE, WITH NO GROSS OR IRREPARABLE PATHOLOGIC CHANGES IN BLOOD VESSELS & SKIN. THE CLINICAL PICTURE REFLECTS PRIMARY HYPOXIC TRAUMA GIVING RISE TO THREE CLEARLY RECOGNIZABLE CONDITIONS: (1) ISCHEMIA, DENOTED BY A PALE PULSELESS EXTREMITY; (2) HYPEREMIA, CHARACTERIZED BY A BOUNDING PULSATILE CIRCULATION IN RED SWOLLEN PAINFUL FEET; AND (3) POSTHYPEREMIC RECOVERY PERIOD. THE INITIAL COLD-INDUCED VASOCONSTRICTION, INCREASED BLOOD VISCOSITY, & IMPAIRED OXYGEN TRANSPORT IN THE ISCHEMIC STATE ARE AGGRAVATED BY SUCH FACTORS AS UNDERNUTRITION, GENERAL HYPOTHERMIA, DEHYDRATION, & TRAUMA FROM RELATIVELY FIXED, PENDANT EXTREMITIES. THE PROBLEM OF REWARMING IS CRITICAL IN THESE PATIENTS DURING THE STAGE OF ISCHEMIA, WHEN OVERHEATING OF TISSUE MAY LEAD TO GANGRENE. IN THE STATE OF HYPEREMIA, THE RED SWOLLEN FEET REQUIRE JUDICIOUS COOLING. SEVERE CASES MAY SHOW MUSCULAR WEAKNESS, ATROPHY, ULCERATION, & GANGRENE OF SUPERFICIAL AREAS. THE SEQUELAE OF EVEN Milder INJURIES ARE SENSITIVITY TO COLD & PAIN ON WEIGHT BEARING, WHICH MAY BE SEVERE AND LAST FOR MANY YEARS.

CLINICAL MANIFESTATIONS (503) AT THE TIME OF RESCUE FROM SEA, OR WHEN FIRST SEEN IN TRENCH WARFARE, COLD WATER IMMERSION FOOT OFTEN PRESENTS AS PULSELESS, COLD, RED FEET WITH A SOCK DISTRIBUTION OF HYPESTHESIA OR ANESTHESIA. THE CONDITION MAY DEVELOP INSIDIOUSLY, WITH ONLY NUMBNESS, PARESTHESIAS & SLIGHT SWELLING AS LONG AS THE TISSUES ARE SUPPORTED BY BOOTS OR SHOES. AS SOON AS THE SUPPORT IS REMOVED, EDEMA, TINGLING, ITCHING AND SEVERE PAIN OCCUR. THE SKIN LATER BECOMES MOTTLED YELLOW, BLUE, OR BLACK. THIS IS CALLED THE PREHYPEREMIC STAGE & LASTS A FEW HOURS TO A FEW DAYS. A HYPEREMIC STAGE FOLLOWS, CHARACTERIZED BY RED, HOT, DRY FEET, BURNING PARESTHESIAS, & INTENSE PAINS, SHOOTING OR STABBING IN NATURE. PULSES ARE NOW BOUNDING. EDEMA INCREASES WITH FORMATION OF

BLISTERS, WHICH MAY WEEP SEROUS FLUID & THEN SLOWLY HEAL. IN SEVERE CASES, MUSCLE WEAKNESS & WASTING, ULCERATIONS, & GANGRENOUS PATCHES DEVELOP. GANGRENE IS OFTEN SUPERFICIAL AND THE NECROTIC SKIN SOMETIMES SHEDS IN LARGE PIECES LEAVING HEALTHY SKIN BENEATH. EVEN IN THE ABSENCE OF GANGRENE, EXTENSIVE EXFOLIATION IS COMMON. THIS STAGE LASTS 1 to 10 WEEKS, DEPENDING ON THE GRADE OF INITIAL INJURY.

THE RECOVERY STAGE (POSTHYPEREMIC) BLENDS INDISTINGUISHABLY WITH THE HYPEREMIC STAGE; THERE IS A RETURN OF VASCULAR TONE WITH RESTORATION OF NORMAL SKIN COLOR & TEMPERATURE. RECOVERY MAY BE COMPLETE IN MILD CASES WITHIN 2 to 5 WEEKS, BUT SEVERE CASES OFTEN REQUIRE 3 to 12 MONTHS. A FEW PATIENTS SHOW LATE SEQUELAE SUCH AS SENSITIVITY TO COLD WITH RAYNAUD'S PHENOMENON; GENERAL OR MARGINAL HYPERHIDROSIS; PARESTHESIAS THAT ARE INCREASED BY WARMTH, DEPENDENCY, OR EXERTION: RIGID TOES CAUSED BY FIBROSIS OF MUSCLES: CONTRACTED JOINTS IN THE FEET & TOES; OR PAINFUL, INDOLENT ULCERS OF THE DIGITS OR THEIR STUMPS.

WARM WATER IMMERSION FOOT PRESENTS WITH PAINFUL & EXTREMELY TENDER FEET, ESPECIALLY OVER PRESSURE AREAS. WRINKLED, WHITE, CONVOLUTED PLANTAR SURFACES & EVEN MACERATION ARE SEEN ON EXAMINATION. SYMPTOMS & SIGNS SUBSIDE WITHIN A WEEK, USUALLY LEAVING NO RESIDUAL.

FROSTBITE (504) IN TRUE FROSTBIT, IN CONTRAST WITH IMMERSION FOOT, THE BLOOD VESSELS MAY BE SEVERELY OR IRREPARABLE INJURED, THE CIRCULATION OF BLOOD CEASES, & THE VASCULAR BEDS OF THE FROZEN TISSUES ARE OCCLUDED BY AGGLUTINATED CELL AGGREGATES & THROMBI. THE CUTANEOUS INJURY CONSISTS IN PART OF SEPARATION OF THE EPIDERMAL-DERMAL INTERFACE. THERE IS A DISTINCTION BETWEEN DIRECT INJURY TO CELLS & THE SUBSEQUENT FULMINATING VASCULAR REACTION & STASIS WHICH PRECEDE TISSUE NECROSIS. IN THE EARLY POSTTHAWING STAGE MUCH OF THE INTRAVASCULAR CLUMPING IS REVERSIBLE. HOWEVER, WITH THE PASSAGE OF TIME, CLUMPED RED CELLS WITHIN VESSELS IN INJURED TISSUE LOSE THEIR MORPHOLOGIC IDENTITY & TAKE ON THE APPEARANCE OF A HOMOGENEOUS, HYALINACEOUS PLUG. IT HAS BEEN SHOWN EXPERIMENTALLY THAT MUCH OF THE INTRAVASCULAR AGGREGATION FOLLOWING FREEZING INJURY CAN BE REVERSED, & MICROCIRCULATORY PERFUSION IMPROVED WHEN LOW MOLECULAR WEIGHT DEXTRAN IS GIVEN INTRAVENOUSLY SHORTLY AFTER INJURY.

THE DISCOURAGING CLINICAL ASPECTS OF COLD INJURY, WHICH PRESENT A MYRIAD OF PATHOLOGIC DERANGEMENTS, STEM FROM ITS ORIGIN. IN THE MILITARY, COLD INJURY IS OFTEN THE BADGE OF DEPRESSION, DEMORALIZATION, & DEFEAT. IT AFFLICTS ISOLATED SCATTERED UNITS WITH THEIR HEAVY TOLL OF WOUNDED. LACK OF FOOD, EQUIPMENT, SHELTER, & WARMTH MAKE INEVITABLE THE DISASTROUS INJURY INFLICTED BY COLD.....

SEQUALAE OF FROSTBITE INJURY. A FOLLOW-UP OF 100 KOREAN COLD-INJURY CASUALTIES REVEALED THAT BOTH AFTER 4 AND AFTER 13 YEARS, THERE WAS EXCESSIVE SWEATING, PAIN, COLD FEET, NUMBNESS, ABNORMAL COLOR, & JOINT SYMPTOMATOLOGY. SYMPTOMS WERE MORE SEVERE DURING THE WINTER MONTHS OR ON EXPOSURE TO COLD. CHARACTERISTIC PHYSICAL FINDINGS (AFTER 4 YEARS) WERE TISSUE LOSS & SCARRING, ABNORMAL NAILS, DISCOLORATION & DEPIGMENTATION, HYPERHYDROSIS, & ON X-RAY, OSTEOPOROSIS & CYSTIC DEFECTS IN BONE NEAR JOINT SURFACES. PATIENTS WHO HAD HAD SYMPATHECTOMY WERE ALMOST FREE OF COMPLAINTS.

(505) SENSITIVITY TO COLD, PARESTHESIAS, AND A PREDILECTION TO REPEATED FROSTBITE OFTEN PERSIST. IN SEVERE FROSTBITE, FIBROSIS OF TISSUE MAY LEAD TO DISABILITY, AND GANGRENOUS EXTREMITIES MAY REQUIRE AMPUTATION.

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DIGESTIVE TRACT (FOLLOW-UP STUDIES OF WORLD WAR II & KOREA PRISONERS, GILBERT W. BEEBE AMERICAN JOURNAL OF EPIDEMIOLOGY 1975)

IN ADDITION TO PSYCHOLOGIC RESIDUALS, PWJ'S & PWK'S SUFFERED FAR MORE THAN CONTROLS OR PWE'S FROM TUBERCULOSIS & FROM OTHER INFECTIVE & PARASITIC DISEASES. IN ADDITION, PWJ'S SUSTAINED A HIGHLY SIGNIFICANT EXCESS MORBIDITY FROM NUTRITIONAL DISORDERS IN EVERY FOLLOW-UP INTERVAL, & FROM NEURITIS, PERIPHERAL NERVE, EYE & RELATED DISORDERS FROM DISEASES OF THE INTESTINES, LIVER, ETS., FROM GENITO-URINARY DISEASES, & FROM DISEASES OF BONES & ORGANS OF MOVEMENT, FOR MOST OF THE FOLLOW-UP INTERVALS.

EYE SIGHT AND HEARING

Department of the Army, Office of the Surgeon General, Washington, D.C. 20314. Malnutrition & Deficiency Diseases, Page 167, Personal Health Measures & Immunization. Pg.168-169.

PRISONERS OF WAR: THE GREATEST INCIDENCE OF EVIDENT NUTRITIONAL DEFICIENCY DISEASE OCCURRED IN RECOVERED ALLIED PRISONERS OF WAR AND IN CIVILIANS OF LIBERATED AND CONQUERED COUNTRIES.....

EXPERIMENTAL STUDIES AS WELL AS CLINICAL OBSERVATIONS SUGGEST THAT THE CHARACTERISTICS OF DEFICIENCY DISEASE RESULTING FROM RELATIVELY ACUTE AND CHRONIC DEFICIENCY STATES VARY CONSIDERABLY. THIS DIFFERENCE MAY BE ILLUSTRATED BY SOME UNUSUAL FEATURES OF THE CASES OF THIAMINE DEFICIENCY FROM THE PACIFIC. AMONG THESE, THERE OCCURRED AN UNUSUAL AND UNEXPECTED NUMBER WITH EVIDENCE OF INVOLVEMENT OF THE SECOND (OPTIC) AND EIGHTH (ACOUSTIC) CRANIAL NERVES. INVOLVEMENT OF THE OPTIC NERVE IN THIAMINE DEFICIENCY HAD ONLY RARELY BEEN OBSERVED AND REPORTED PREVIOUSLY. THE WRITER HAS SEEN TWO CASES, APPARENTLY OF THIS KIND, WITH ATROPHY OF THE NERVE HEAD AND AT CERTAIN STAGES AN OPTIC NEURITIS CHARACTERIZING THE FINDINGS. WHILE SOME DOUBT HAS EXISTED AS TO THE ETIOLOGY, AND A SUSPICION OF A TOXIC OPTIC NEURITIS FROM METHANOL POISONING EXISTED IN SOME, THIS DOES NOT SEEM TO BE AN ENTIRELY ADEQUATE EXPLANATION. THERE IS, FURTHERMORE, THE THEORETICAL POSSIBILITY THAT A PRIMARY THIAMINE DEFICIENCY MAY HAVE PREDISPOSED AND CONDITIONED TO AN EFFECT OF METHANOL WHICH WOULD OTHERWISE NOT HAVE OCCURRED. THE CASES IN CIVILIAN LIFE OBSERVED BY THE WRITER OCCURRED IN CHRONIC ALCOHOLICS. SO FAR THE CONDITION HAS REMAINED STATIONARY IN MOST OF THESE SUBJECTS WITH LITTLE OR NO EVIDENCE OF IMPROVEMENT IN FUNCTION AND NO CHANGE IN THE MORPHOLOGIC APPEARANCE. UNFORTUNATELY, A VARIETY OF TREATMENT AND MODIFICATION OF THE NUTRITIONAL CONDITION BEFORE STUDIES WERE BEGUN TO DETERMINE THE NUTRITIONAL STATUS AND POSSIBLE ETIOLOGY MADE LATER STUDIES ESSENTIALLY VALUELESS.

MUCH THE SAME SITUATION OCCURRED IN THOSE SUBJECTS WITH INVOLVEMENT OF EIGHTH NERVE. DEAFNESS, PARTIAL OR NEARLY COMPLETE, OF A "NERVE" TYPE, WITH LITTLE TENDENCY TO IMPROVE WAS THE PRINCIPAL FINDING.

ALCOHOLISM AND THE EX-POW

REFERENCE: Mortality & Morbidity After Excessive Stress by Leo Eitinger & Axel Strom, Humanities Press, New York, 1973.

THE INCREASE IN THE USE OF ALCOHOL AMONG THE EX-PRISONERS IS NOT DIFFICULT TO EXPLAIN. CONTINUAL ANXIETY DREAMS, THE LACK OF UNDERSTANDING OF THEIR EXPERIENCES THEY MET WITH IN THEIR ENVIRONMENT, THE UNCERTAINTY IN INTERPERSONAL RELATIONS, THE 'PERSONALITY CHANGES CAUSED BY EXPERIENCE' AS DESCRIBED BY VENZLAFF (1958), ARE ALL GOOD REASONS. IF ONE ADDS THE SOCIAL UNCERTAINTY AND FEELINGS OF INSUFFICIENCY DUE TO FAILING WORKING CAPACITY THAT AFFLICTED MANY OF THEM, IT IS NOT SURPRISING THAT MANY CHOSE THE EASIEST WAY OUT OF THEIR DIFFICULTIES THROUGH ALCOHOL, WITH ALL ITS UNFORTUNATE SIDE EFFECTS.

ALTHOUGH THE POSSIBILITY CANNOT BE EXCLUDED THAT BEFORE THE WAR THE EX-PRISONERS WERE ALREADY A GROUP WITH A GREATER MORBIDITY AND MORE GENERAL USE OF ALCOHOL, WE WERE NOT ABLE TO FIND ANY EVIDENCE TO SUPPORT THIS ASSUMPTION. WE MUST THEREFORE CONCLUDE THAT IT WAS ONLY AFTER THE WAR THAT THE EX-PRISONERS BECAME A POPULATION GROUP WITH MORE NERVOUS PROBLEMS AND CONSEQUENTLY GREATER MORBIDITY IN THIS AREA, WITH MORE ALCOHOL PROBLEMS RESULTING THEREFROM, THAN THE MATCHED CONTROL GROUP.

REFERENCE: Follow-up Studies of WW II & Korean Prisoners, by Gilbert W. Beebe, American Journal of Epidemiology, 1975.

HOSPITAL ADMISSION RATES FOR JAPANESE P.O.W.S. WHICH DIFFER SIGNIFICANTLY FROM CONTROLS. PERIOD 1946 - 1965 - ALCOHOLIC PSYCHOSIS 1.5 POW JAPAN - 0.3 CONTROLS. FOR ALCOHOLISM 2.6 POW JAPAN - 0.2 CONTROLS.

PRISONERS OF WAR ARE SOLDIERS, SAILORS, AIRMEN, MARINES OR CIVILIANS. THEY ARE NOT WAR CRIMINALS; THEY ARE VETERANS OF THE MILITARY SERVICES OR CIVILIAN AGENCIES. AS MEN OF HONOR THEY REPRESENT AN UNFORTUNATE GROUP. VICTIMS OF ENEMY CAPTURE, TAKEN WHILE FIGHTING FOR THEIR COUNTRY. IT MUST NEVER BE THAT THEY ARE STRIPPED OF THEIR SELF RESPECT, THEIR DIGNITY OR THEIR INHERENT RIGHTS AS HUMAN BEINGS OR AS VETERANS OF THEIR COUNTRY'S COMBAT FORCES. IT IS IMPOSSIBLE TO RELIEVE THEIR HARDSHIPS AND SUFFERING, THEIR LONELINESS, THEIR PHYSICAL AND MENTAL ILLNESSES AND DISORDERS, OR TO EVEN REASSURE THEM WITH RESPECT TO THEIR FAMILY AND LOVED ONES. THEY HAVE NOT BEEN FORGOTTEN - THEY MUST NEVER BE FORGOTTEN.

....IT IS MOST ALARMING, BUT SIGNIFICANTLY APPARENT, THAT EFFECTS OF TORTURE, STARVATION, MALNUTRITION, MENTAL STRESS AND MALTREATMENT OF PRISONERS OF WAR IN WORLD WAR II & THE KOREAN CONFLICT ARE ONLY JUST NOW BECOMING EVIDENT. FEW, IF ANY, STATISTICS ARE AVAILABLE WITH RESPECT TO INDIVIDUAL EXPERIENCES AS PRISONERS OF WAR. FOLLOWING THE CESSATION OF HOSTILITIES PRISONERS WERE REPATRIATED. THE EVIDENCE OF TORTURE, ATROCITIES, STARVATION, MALNUTRITION, DISEASE AND MISTREATMENT BOTH PHYSICAL AND MENTAL WAS OBVIOUS, BASED ON OBSERVATION, STATEMENTS BY THE INDIVIDUAL AND AFFIDAVITS BY COMRADES. THESE ARE THE ONLY RECORDS.....

"IN MANY CASES, THE EFFECTS OF MALNUTRITION WOULD ESCAPE DETECTION IN ORDINARY PHYSICAL EXAMINATIONS BECAUSE SOME SYMPTOMS ARE NOT AS DETECTIBLE AS THEY ARE IN SUCH DISORDERS AS BERIBERI AND PELLAGRA. MOREOVER, THE AFTER EFFECTS OF MALNUTRITION VARY AND, IN CERTAIN CASES DO NOT SHOW UP UNTIL LONG AFTER THE PRISONERS OF WAR HAVE BEEN RELEASED FROM CONFINEMENT.".....

THESE AFTER EFFECTS MAY NOT BE APPARENT FOR MANY MONTHS OR YEARS, IN FORMER HEALTHY MEN. AMONG THE REPORTED RESIDUES ARE EXCESSIVE FATIGUE, WEAKNESS, INABILITY TO MAINTAIN PROPER WEIGHT, GENERAL NERVOUSNESS, EXCESSIVE SWEATING, PARESTHESIAS, VISUAL DEFECTS INCLUDING OPTIC ATROPHY, HERNIAS DEVELOPED DURING THE PERIOD OF EMACIATION, CARDIAC AND GASTROINTESTINAL COMPLAINTS AND BONE DEFECTS. MANY PERSONS APPARENTLY RECOVER COMPLETELY FROM EPISODES OF MALNUTRITION BUT IN SOME CASES AT LEAST, THERE ARE RESIDUES WHICH MAY RESULT IN SERIOUS IMPAIRMENT OR EVEN TOTAL LOSS OF THE ABILITY TO MAINTAIN GAINFUL EMPLOYMENT." AGAIN FROM THE SAME PAGE-"IN ADDITION MALNUTRITION MAY INFLUENCE THE SUSCEPTIBILITY TO OR THE COURSE OF SUCH IMPORTANT DISEASES AS ARTERIOSCLEROSIS, HYPERTENSION, NEOPLASMS, ALLERGIC STATES, CIRRHOSIS OF THE LIVER, PEPTIC ULCER, THE ARTHRITIDES AND CERTAIN OF THE ANEMIAS." THE FOREGOING ARE NOT CASUAL OBSERVATIONS BUT FACTUAL STUDIES CONDUCTED BY OUTSTANDING AUTHORITIES IN THE FIELD OF NUTRITION. EQUALLY IT IS POSSIBLE TO CITE MANY REFERENCES FROM OTHER AUTHORITIES IN THE FIELD OF NUTRITION AND THE EFFECT OF IMPRISONMENT ON PRISONERS OF WAR BUT SUCH MATERIAL WOULD ONLY BE A DUPLICATION OF THAT HERE PRESENTED....

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CANADIAN PENSION COMMITTEE GUIDELINES PRISONERS OF WAR OF THE JAPANESE MAY 7, 1976

STATISTICS:

ORIGINAL NUMBERS OF FORCE-----1,975

SURVIVORS OF HONG KONG FORCE AS OF MARCH 31, 1976---1,153

RICHARDSON STUDY:

IN DECEMBER 1963, THE PARLIAMENTARY STANDING COMMITTEE ON VETERANS AFFAIRS RECOMMENDED THAT A SPECIAL STUDY AND SURVEY BE MADE OF THE PROBLEMS, AND PARTICULARLY THE DISABILITIES, OF HONG KONG VETERANS. THE MINISTER OF VETERANS AFFAIRS INSTRUCTED THE CANADIAN PENSION COMMISSION TO UNDERTAKE THIS STUDY, THE RESULTS OF WHICH ARE CONTAINED IN "A STUDY & SURVEY OF THE DISABILITIES AND PROBLEMS OF HONG KONG VETERANS 1964 - 65" WHICH WAS AUTHORED BY DR. H.J. RICHARDSON, THE FORMER CHIEF MEDICAL ADVISER OF THE COMMISSION. THE VARIOUS FACTORS LEADING TO THE DISABILITIES OF PRISONERS-OF-WAR OF THE JAPANESE AS DESCRIBED BELOW HAVE BEEN ACCEPTED.

STRESSES OF CAPTIVITY:

- 1. DIET - GROSSLY INADEQUATE IN CALORIES AND PROTEIN.

- NO NUTRITIONAL BALANCE.
- VITAMIN DEFICIENCY WAS UNIVERSAL, PARTICULARLY VITAMIN B-COMPLEX.
- LOSS OF WEIGHT AVERAGING 20%, BUT UP TO 40% IN SOME INSTANCES.

2. MEDICINES - THESE WERE STORED IN PRISON COMPOUNDS AND WERE IN SHORT SUPPLY OR NOT AVAILABLE AND AT TIMES DELIBERATELY WITHHELD BY THE JAPANESE.
3. LACK OF COMMUNICATIONS - ISOLATION WAS ALMOST COMPLETE WITH NO MAIL TO OR FROM FAMILIES, NO RADIOS, NO NEWSPAPERS, OR OTHER SOURCES OF RELIABLE NEWS FROM THE OUTSIDE WORLD AND DISTURBING RUMOURS WERE RIFE.

ORGANIC BASIS OF DISABILITY:

POSTMORTEM EXAMINATIONS REVEALED THAT THERE WAS AN ORGANIC BASIS FOR RESIDUAL DISABILITY RESULTING FROM AVITAMINOSIS AND DIETARY INSUFFICIENCY. DEMYELINATION OF THE POSTERIOR AND ANTERIOR COLUMNS OF THE SPINAL CORD WAS FOUND ESPECIALLY IN THE THORACIC AREA. OPTIC ATROPHY WAS ALSO NOTED. THESE ORGANIC NERVE CHANGES WERE CONSIDERED TO BE DUE LARGELY TO THE LACK OF VITAMIN B-COMPLEX.

AVITAMINOSIS WITH RESIDUAL EFFECTS:

THIS TERM HAS BEEN USED BY THE CANADIAN PENSION COMMISSION TO IDENTIFY THE SYMPTOM-COMPLEX AS PREFERABLE TO OTHER SYNONYMS SUCH AS BERIBERI, PELLAGRA, MALNUTRITION-DEPRIVATION SYNDROME, ETC..

RESIDUAL DISABILITIES RECOGNIZED BY THE COMMISSION AS RELATED TO AVITAMINOSIS AND DIETARY INSUFFICIENCY:

1. GENERAL - EASY FATIGABILITY, LACK OF STAMINA, NON-SPECIFIC MUSCULO-SKELETAL COMPLAINTS AND IMPAIRED MOTIVATION. USUAL ASSESSMENT RANGE 5% TO 15%. NON-SPECIFIC MUSCULO-SKELETAL COMPLAINTS ARE NOT NECESSARILY RELATED TO THE DEVELOPMENT OF DEFINED ARTHRITIC DISEASE MANY YEARS LATER.
2. OCULAR - PERMANENT OPTIC ATROPHY WITH NON-PROGRESSIVE CENTRAL SCOTOMATA, SOME PERIPHERAL FIELD LOSS AND INCREASED SUSCEPTIBILITY TO GLAUCOMA BECAUSE OF SCAR TISSUE ARE ACCEPTED. TEMPORARY WEAKNESS OF OCULAR MUSCLES AFFECTING ACCOMMODATION AND CONVERGENCE WAS NOTED BUT DISAPPEARED BY 1946-47. THE DEGREE OF PERMANENT OPTIC ATROPHY WAS THOUGHT TO BE NON-PROGRESSIVE ONCE NORMAL NUTRITION AND METABOLISM WERE ESTABLISHED. DETERIORATION OF VISION AND OF THE OPTIC ATROPHY FROM OTHER CAUSES MAY OCCUR SUBSEQUENTLY WITH AN APPARENT PROGRESSION OF THE OPTIC ATROPHY IN THE RECENT PAST. DUE TO THE DIFFICULTY IN PRECISELY IDENTIFYING THESE OTHER CAUSES, ACCEPTANCE OF SOME DETERIORATION OF THE OPTIC ATROPHY MAY BE NECESSARY IN THE ASSESSMENT. SPECTACLES ARE PROVIDED BY D.V.A. TREATMENT SERVICES WITHOUT CHARGE.....
4. GASTROINTESTINAL - IN 1945 & 1946 THERE WERE MANY COMPLAINTS OF NON-SPECIFIC GASTROINTESTINAL SYMPTOMS. THERE WERE FLATULENCE, SURFEIT, BELCHING, MORNING ANOREXIA AND NAUSEA AFFECTING ALMOST ALL P.O.W.'S OF THE JAPANESE. THESE NON-SPECIFIC SYMPTOMS NOT TYPICAL OF ANY SPECIFIC SYNDROME LARGELY DISAPPEARED WITHIN A MATTER OF WEEKS AND MONTHS, AND ARE NOT CONSIDERED TO HAVE ANY SIGNIFICANCE IN RELATIONSHIP TO THE LATER APPEARANCE OF ORGANIC DISEASE. THEY WERE COMMON ENOUGH IN THIS GROUP OF VETERANS TO JUSTIFY AUTOMATICALLY ACCEPTING THEM AS BEING RELATED TO INCARCERATION BY THE JAPANESE. THESE SYMPTOMS HAVE BEEN ASSESSED UNDER THE DIAGNOSIS OF AVITAMINOSIS WITH RESIDUAL EFFECTS, OFTEN AT 10% AS THE EQUIVALENT OF A SYMPTOMATIC HEALED PEPTIC ULCER.

INFECTIOUS HEPATITIS DID OCCUR DURING CAPTIVITY BUT WAS NOT WELL DOCUMENTED BECAUSE OF LACK OF RECORDS. ANY UPPER GASTROINTESTINAL SYMPTOMS WHICH MIGHT BE CONSIDERED RESIDUALS OF THIS DISEASE WOULD BE ASSESSED UNDER THIS GASTROINTESTINAL COMPONENT SMALL AND LARGE BOWEL DISEASE DURING SERVICE INCLUDED AMOEBIASIS, HOOKWORM, AND OTHER MINOR INFECTIONS, AS WELL AS IRRITATIONS FROM INAPPROPRIATE FOODS AND PHYSICAL-CHEMICAL CONTAMINANTS. THIS HAS RESULTED IN LATER YEARS IN THE SO-CALLED "IRRITABLE BOWEL" AND LITTLE ELSE. SUCH PERSISTENT SYMPTOMS OF "IRRITABLE BOWEL" REPRESENT A MINOR DISABILITY. USUAL ASSESSMENT RANGE, 5% TO 10%.....
7. GENITO-URINARY -THERE WAS NO EVIDENCE OF STERILITY, BUT DOCUMENTARY, PERSONAL AND HEARSAY EVIDENCE SUGGEST AN INCREASED INCIDENCE OF RELATIVE IMPOTENCE IN THE 5TH AND 6TH DECADES. THIS DISABILITY HAS BEEN ASSESSED IN THE 10% RANGE AS AN ADDITION TO THE NEUROLOGICAL COMPONENT.

POST-DISCHARGE RULINGS:

POST-DISCHARGE CONDITIONS MAY BE CLAIMED AS CONSEQUENTIAL TO AVITAMINOSIS WITH RESIDUAL EFFECTS. WHEN SUCH RULINGS ARE FAVOURABLE, THE CONDITIONS ARE ASSESSED ACCORDING TO THE TABLE OF DISABILITIES. THE DEGREE OF RELATIONSHIP OF A CONDITION CLAIMED AS CONSEQUENTIAL UPON AVITAMINOSIS WITH RESIDUAL EFFECTS VARIES INVERSELY WITH THE TIME INTERVAL BETWEEN CAPTIVITY AND THE ONSET OF SYMPTOMS OR SIGNS DIAGNOSTIC OF THE DISEASE. SOME SUCH CONDITIONS APPEARING IN THE EARLY POST-DISCHARGE PERIOD HAVE BEEN PENSIONED IN FULL AS RELATED TO THE EFFECTS OF CAPTIVITY. OTHER CLAIMED CONDITIONS OF RECENT ORIGIN WITH NO RELEVANT NON-SPECIFIC SYMPTOMS OR CONTINUITY OF COMPLAINTS ARE NOT CONSIDERED TO HAVE ANY RELATIONSHIP TO THE PERIOD OF CAPTIVITY.

SPECIFIC AREAS OF CONSEQUENTIAL RULINGS

1. OCULAR - GLAUCOMA AND CATARACT, WHEN DIAGNOSED, REQUIRE RULING TO DETERMINE WHETHER AND TO WHAT DEGREE THEY MAY BE RELATED TO AVITAMINOSIS.
2. GASTROINTESTINAL - PEPTIC ULCERS ARE COMMONLY RULED UPON IN P.O.W.'S OF THE JAPANESE. THESE WERE SIGNIFICANTLY MORE COMMON THAN IN ANY OTHER LARGE GROUP OF VETERANS KNOWN TO HAVE BEEN STUDIED.
3. OSTEOARTHRITIS AND DISC DISEASE - WHERE THERE IS CONTINUITY OF MUSCULO-SKELETAL DISCOMFORT RELATED TO SPECIFIC JOINTS OR AREAS OF THE SPINE, CONSEQUENTIAL RULINGS FOR OSTEOARTHRITIS OF INDIVIDUAL JOINTS AND FOR DEGENERATIVE DISEASE OF THE SPINE HAVE BEEN GIVEN.

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MALARIA

MALARIA - AN ACUTE AND SOMETIMES CHRONIC INFECTIOUS DISEASE DUE TO THE PRESENCE OF MALARIAL PARASITES WITH RED BLOOD CELLS, WHICH IS INTRODUCED INTO THE BODY BY THE MOSQUITO BITE. THERE ARE SEVERAL TYPES OF MALARIA OF WHICH PLASMODIUM FALCIPARUM AND PLASMODIUM VIVAX WERE THE TWO THAT INFECTED POW'S. IN THE PACIFIC 71.6%, IN EUROPE 2.8%, IN KOREA 28.5% AND MANY IN THE VIET NAM ERA SUFFERED FROM THE DISEASE.

MALARIA HEPATITIS by LTC John J. Deller, Jr., MC, USA, Military Medicine, 132:614-620, 1967.

THAT MALARIA IS A DISEASE FROM WHICH NO ORGAN OR TISSUE IS EXEMPT HAS LONG BEEN KNOWN (1). THERE ARE REPORTS OF MALARIA AFFECTING A VARIETY OF ORGANS INCLUDING HEART, LUNGS, BRAIN, KIDNEY AND LIVER (2).

XPW BULLETIN, American Ex-Prisoners of War, Inc., Vol. 24 No. 11, Nov. 1967

"DR. CHARLES T. BROWN, M.C. USA COL. (RET), 215 BLUE BONNET BLVD., SAN ANTONIO, TX 78209, WRITES THAT "ALL STRAINS OF MALARIA HAVE BEEN INCRIMENATED AS FAR AS WE KNOW" AND THE EFFECTS OF THE DISEASE FOR PROLONGED PERIODS OF TIME WITHOUT ADEQUATE MEDICATION ARE NOW CAUSING PRESENT DAY SYMPTOMS PARTICULARLY IN THE NERVOUS SYSTEMS OF THE XPOW. IF YOU HAVE A NERVOUS CONDITION, BRING THIS FACT TO YOUR DOCTOR'S ATTENTION.

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COMMUNICABLE DISEASES: MALARIA, Med. Dept., U.S. Army, Preventive Med. IN WW II, Vol VI, 1963

EPIDEMIOLOGY OF MALARIA

THE MOUNTAINOUS TERRAIN AND CLIMATE OF BATAAN PROVIDE IDEAL CONDITIONS FOR THE PROPAGATION OF THE VECTOR OF MALARIA (2). FROM THE TWO CHIEF MOUNTAIN MASSES ON BATAAN, NUMEROUS STREAMS COURSE IN ALL DIRECTIONS TOWARD MANILA BAY AND THE CHINA SEA. THE TRANSITION FROM THE HIGHER ALTITUDES TO THE FLAT AND NARROW COASTAL PLAIN THROUGH THE FOOTHILLS INSURES A RAPID FLOW OF WATER IN THE STREAMS. THE RAINFALL IS SUFFICIENTLY ADEQUATE TO MAINTAIN A LARGE NUMBER OF PERMANENT STREAMS THROUGH THE DRY SEASON, WHICH EXTENDS FROM NOVEMBER THROUGH MAY. THESE PROVIDE ADEQUATE BREEDING GROUNDS AND SUPPORT PROTECTIVE VEGETATION IN WHICH ADULT MOSQUITOES SURVIVE THROUGHOUT THE DRY SEASON.

THE CHIEF VECTOR OF MALARIA IN THE PHILIPPINES IS ANOPHELES MINIMUS FLARIROSTRIS. (3) THIS MOSQUITO BREEDS MOST READILY IN THE PROTECTED AREAS OF RAPIDLY FLOWING RIVERS,

STREAMS, AND IRRIGATION DITCHES, PREFERRING SHADY PLACES AND CLEAR, FRESH WATER. BREEDING DOES NOT NORMALLY OCCUR IN SALT WATER, RICE PADDIES, OR IN WATER ABOVE 2,000 FEET ALTITUDE. THUS, MALARIA IN BATAAN, AS THROUGHOUT THE PHILIPPINES, IS A DISEASE CONTRACTED IN THE FOOTHILLS, ESPECIALLY BETWEEN THE FLAT COASTAL PLAIN AND THE HIGHER GROUND BELOW 2,000 FEET ALTITUDE. SEASONAL VARIATIONS IN THE INCIDENCE OF MALARIA ARE RELATED TO THE EFFECTS OF THE DRYING OF THE SMALL TRIBUTARIES OF STREAMS AND IRRIGATION CANALS AND TO THE FLUSHING OF THE BREEDING GROUNDS DURING THE HEAVIEST RAINFALL. THUS, BATAAN CONSTITUTED A POTENT HAZARD FOR MALARIAL INFECTION DURING THE SEASON WHEN MILITARY OPERATIONS WERE FEASIBLE.....

THE MALARIA PROBLEM

ONE ESTIMATE, WHICH WAS PROBABLY CONSERVATIVE, JUDGED THE NUMBER OF CASES OF MALARIA IN FILIPINO-AMERICAN FORCES AT THE TIME OF SURRENDER, ON 9 APRIL 1942, TO BE 24,000.(11) NO ESTIMATE IS AVAILABLE OF THE NUMBER OF CASES IN CIVILIAN REFUGEES OR IN THE JAPANESE FORCES ON THAT DATE. IN A SURVEY OF 1,252 U.S. PATIENTS AT GENERAL HOSPITAL NUMBER 2, MADE 3 WEEKS AFTER THE SURRENDER OF BATAAN, 817 (65%) GAVE A HISTORY OF HAVING BEEN TREATED FOR MALARIA DURING THE PRECEDING 4 MONTHS.(12) EARLY IN MARCH, THE COMMANDING OFFICER OF GENERAL HOSPITAL NUMBER 2, HAD REPORTED AN ESTIMATED 60% INCIDENCE OF MALARIA IN PERSONNEL ASSIGNED TO THE HOSPITAL. THE APPALLING DEATH RATE IN JAPANESE-HELD PRISONERS OF WAR DURING THE FIRST 6 MONTHS OF CAPTIVITY IS FURTHER EVIDENCE OF THE CATASTROPHIC EFFECTS OF INFECTION CONTRACTED IN BATAAN. A SUBSTANTIAL NUMBER OF THESE DEATHS IS ATTRIBUTABLE TO MALARIA.....

IMPACT ON DEFENSE FORCES

THE DELETERIOUS EFFECTS OF MALARIA ON THE TROOPS IN BATAAN BECAME STRIKINGLY EVIDENT IN FEBRUARY 1942 AND WERE AGGRAVATED BY THE UNIVERSAL STATE OF MALNUTRITION. WITHIN LESS THAN 1 MONTH AFTER THE OUTBREAK OF WAR, 8 DECEMBER 1941, THE DEFENSE FORCES WERE CONFRONTED WITH AN ACUTE FOOD SHORTAGE. ON 5 JANUARY 1942, THE ENTIRE FORCE WAS PLACED ON HALF RATIONS. THE BASIC INGREDIENT, OF NECESSITY, WAS RICE, MOSTLY OF POOR QUALITY. THIS WAS SUPPLEMENTED BY SMALL AMOUNTS OF WHITE FLOUR, CANNED GOODS (SALMON, MEAT, TOMATOES), EVAPORATED MILK, AND IRREGULAR ISSUES OF FRESH CARABAO. TEA, COFFEE, SUGAR, AND BUTTER WERE UNAVAILABLE AFTER 1 MONTH. THE RATION WAS GROSSLY DEFICIENT IN PROTEIN, FAT AND VITAMINS. IT PROVIDED A MAXIMUM OF 2,000 CALORIES IN JANUARY, GRADUALLY DIMINISHING TO 1,000 CALORIES BY EARLY MARCH AND ALMOST TO THE VANISHING POINT BY 1 APRIL 1942.

THE ILL EFFECTS OF SEMISTARVATION ON THE TROOPS HAD BECOME CRITICAL BY LATE FEBRUARY 1942. THE SURGEON OF THE ADVANCE ECHELON OF USAFFE (U.S. ARMY FORCES IN THE FAR EAST), BATAAN, ADVISED THE SURGEON, USAFFE, ON CORREGIDOR, IN A MEMORANDUM DATED 27 FEBRUARY 1942, THAT THE DIET OF TROOPS ON BATAAN WAS GROSSLY DEFICIENT AND URGED INCREASED ALLOWANCES OF BEEF, VEGETABLES, MILK AND THE PROCUREMENT, IF POSSIBLE, OF NATIVE FRUITS AND VEGETABLES, AND IN THEIR ABSENCE THE PROCUREMENT OF VITAMIN SUPPLEMENTS.

BY THE THIRD MONTH OF OPERATIONS, WEIGHT LOSS IN THE RANGE OF 20 TO 30 POUNDS WAS COMMONPLACE. MEN COMPLAINED OF WEAKNESS, LASSITUDE, LACK OF ENDURANCE, AND SHORTNESS OF BREATH. MODERATE EXERTION CAUSED TACHYCARDIA AND PALPITATION. THOSE NOMINALLY LISTED AS EFFECTIVE FOR COMBAT COULD NOT ENGAGE IN SUSTAINED EXERTION, SO IT BECAME INCREASINGLY DIFFICULT TO ACCOMPLISH NECESSARY WORK ON AIRSTRIPS, MAINTENANCE OF ROADS, CLEARING OF TRAILS, HAND CARRYING OF SUPPLIES OVER MOUNTAINOUS TERRAIN, AND PATROL ACTIVITIES. GRADUALLY, THE HIGH MORALE AND CONFIDENCE OF JANUARY WAS REPLACED BY A LOSS OF SPIRIT AND APATHY. DIRE PREDICTIONS FOR THE FUTURE COULD BE HEARD. TO LESSEN THE MORALE FURTHER, THE MEN BEGAN TO NOTE SWELLING OF THE ANKLES WITH PITCHING ON PRESSURE WHICH WAS PARTICULARLY EVIDENT TOWARD EVENING. THE PANGS OF HUNGER BECAME MORE INSISTENT.....

ON MARCH 10, 1942, THE COMMANDING OFFICER OF GENERAL HOSPITAL NUMBER 2, DIRECTED A LETTER REGARDING MALARIA CONTROL TO THE SURGEON, PHILIPPINES DEPARTMENT, A PORTION OF WHICH IS QUOTED.

"I WOULD LIKE TO POINT OUT A GRAVE PROBLEM PERTAINING TO THE MEDICAL DEPARTMENT AND THE USAFFE. MALARIA IS RAPIDLY INCREASING; SOME 350 CASES WERE UNDER TREATMENT IN THIS HOSPITAL AS OF MARCH 8TH. THE ADMISSION RATE IS ALARMING, SOME 260 PATIENTS ARRIVING MARCH 9TH. MOST OF THESE ARE MEDICAL AND A LARGE PROPORTION HAVE MALARIA * * *. QUININE PROPHYLAXIS HAVING STOPPED WE ANTICIPATE ADDITIONAL HUNDREDS OR EVEN THOUSANDS OF CASES * * *.

WE ARE URGENTLY IN NEED OF A TREMENDOUS STOCK OF QUININE FOR TREATMENT AND PROPHYLAXIS. THE GENERAL STAFF SHOULD UNDERSTAND THE EXTREME GRAVITY OF THE MALARIA PROBLEM AND GIVE PRIORITY TO QUININE ABOVE THAT OF ANY OTHER CRITICAL ITEM. IF THE MALARIA SITUATION IS NOT BROUGHT UNDER CONTROL THE EFFICIENCY OF THE WHOLE ARMY WILL BE GREATLY IMPAIRED; IN FACT IT WILL BE UNABLE TO PERFORM ITS COMBAT FUNCTIONS. IT IS MY CANDID AND CONSERVATIVE OPINION THAT IF WE DO NOT SECURE A SUFFICIENT SUPPLY OF QUININE FOR OUR TROOPS FROM FRONT TO REAR THAT ALL OTHER SUPPLIES WE MAY GET, WITH THE EXCEPTION OF RATIONS, WILL BE OF LITTLE OR NO VALUE.".....

BY THE END OF MARCH, SOME 7,000 PATIENTS WERE HOSPITALIZED IN THE FORWARD MEDICAL UNITS, A MERE MILE OR SO BEHIND THE MAIN LINE OF RESISTANCE. THESE REPRESENTED ONLY THOSE WHO WERE SEVERELY INCAPACITATED. ACTUALLY, AT LEAST 80% OF THE TROOPS HAD BECOME UNFIT FOR DUTY. ONE REGIMENTAL SURGEON DESCRIBED THE SITUATION AS FOLLOWS: (18)

"TO GIVE AN ACCURATE WORD-PICTURE OF CONDITIONS AS THEY ACTUALLY EXISTED AT THE TIME IMMEDIATELY PRECEDING THE SURRENDER OF OUR FORCES ON BATAAN WOULD TAX THE DESCRIPTIVE POWERS OF A RHETORICAL GENIUS, BUT IN SIMPLE LANGUAGE, ALMOST EVERY MAN IN BATAAN WAS SUFFERING, NOT ONLY FROM THE EFFECTS OF PROLONGED STARVATION, BUT ALSO FROM ONE OR BOTH OF THE ACUTE INFECTIONS THAT PLAGUED US THROUGHOUT THE CAMPAIGN, VIZ, DYSENTERY AND MALARIA. I HAVE SEEN MEN BROUGHT INTO THE BATTALION AID STATIONS AND DIE OF AN OVERWHELMING INFECTION OF DYSENTERY OR CEREBRAL MALARIA BEFORE THEY COULD BE TAGGED AND CLASSIFIED FOR EVACUATION. OF THE SUPPOSEDLY WELL MEN IN THE FIELD, ALL WERE THIN AND WEAK FROM STARVATION. MANY WERE SWOLLEN WITH NUTRITIONAL EDEMA; A LARGE PERCENTAGE WERE PALE AND ANEMIC FROM REPEATED ATTACKS OF MALARIA OR DYSENTERY.".....

WHEN THE FINAL JAPANESE ATTACK BEGAN ON 3 APRIL 1942, IT BECAME IMPERATIVE TO MOVE ALL PATIENTS FROM FORWARD MEDICAL UNITS TO THE REAR HOSPITALS. APPROXIMATELY FIVE THOUSAND PATIENTS WERE ABSORBED AT GENERAL HOSPITAL NUMBER 2 BETWEEN 5 APRIL AND 8 APRIL; OTHER THOUSANDS WERE DIRECTED TO A CONVALESCENT CAMP IN ITS VICINITY. (19) ON 9 APRIL 1942, ALL SURVIVING MEMBERS OF THE FILIPINO-AMERICAN DEFENSE FORCE, INCLUDING PATIENTS AND MEDICAL PERSONNEL, WERE CATEGORIZED AS CAPTIVES AND THEREAFTER WERE REQUIRED TO SUBMIT TO THE ORDERS OF THE IMPERIAL JAPANESE ARMY.

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INFECTIOUS DISEASES, Med. Dept, U.S. Army, Internal Med. In WW II, Vol. II, 1963.

COMPLICATIONS OF MALARIA

IN THE PAST, INVOLVEMENT OF EVERY ORGAN OR ORGAN SYSTEM HAS BEEN DESCRIBED AS COMPLICATING MALARIAL FEVER, PARTICULARLY WHEN CAUSED BY P. FALCIPARUM. THESE HAVE GENERALLY BEEN ASCRIBED TO CAPILLARY INFARCTION RESULTING FROM AGGLUTINATION OF THE PARASITES ALONG THE CAPILLARY ENDOTHELIUM.....THE FOLLOWING MANIFESTATIONS APPEAR, HOWEVER, TO BE FAIRLY WELL DOCUMENTED.

1. CEREBRAL MALARIA—ALMOST WITHOUT EXCEPTION, MALARIA DEATHS WERE DUE TO CEREBRAL INVOLVEMENT. A CLEAR-CUT PICTURE OF JUST WHAT CONSTITUTES CEREBRAL MALARIA WAS OFTEN DIFFICULT TO DRAW. EMPIRICALLY, THE TERM MAY BE APPLIED TO ANY CASE EXHIBITING ANY ONE OR MORE OF THE FOLLOWING FINDINGS: MENINGISMUS, CONVULSIONS, PERSISTENT DELIRIUM, OR WELL-DEFINED NEUROLOGICAL SIGNS. AN INDEX OF THE PREVALENCE OF CEREBRAL MALARIA IN WORLD WAR II MAY BE TAKEN FROM THE RECORDS OF ONE U.S. ARMY GENERAL HOSPITAL IN INDIA WHERE IN 6 MONTHS OF 1943 THERE WERE 40 CEREBRAL CASES AMONG 1,764 U.S. SOLDIERS AND 100 CASES AMONG 4,295 ALLIED PERSONNEL (16). IN THE MEDITERRANEAN THEATER, WHEN THE BULK OF OUR TROOPS WERE IN ITALY, MEDICAL OFFICERS OF APPROXIMATELY 25 EVACUATION, STATION, AND GENERAL HOSPITALS REPORTED 163 CASES OF CEREBRAL MALARIA. OF THESE, 144 WERE RECOGNIZED AS CAUSED BY P. FALCIPARUM, AND 19 WERE ASCRIBED TO P. VIVAX. THERE WERE 11 DEATHS DUE TO P. FALCIPARUM INFECTIONS, AND OF THESE 8 WERE CASES OF CEREBRAL MALARIA. PRELIMINARY TABULATIONS OF INDIVIDUAL MEDICAL RECORDS INDICATE THAT THERE WERE 57 DEATHS DUE TO MALARIA, ALL FORMS, ORIGINATING IN THE MEDITERRANEAN THEATER DURING THE YEARS 1942-45. OF THESE, 27 WERE DUE TO P. FALCIPARUM INFECTIONS.....

WHEN RECOVERY OCCURRED, IT WAS GENERALLY COMPLETED, ALTHOUGH A FEW PATIENTS SHOWED RESIDUAL CRANIAL NERVE PALSIES, HEMIPLEGIA, PARESIS, OR PSYCHOSIS.

2. OTHER INVOLVEMENT OF THE NERVOUS SYSTEM.—IN THE MEDITERRANEAN THEATER, PATIENTS

WERE SEEN WITH PERIPHERAL NEURITIS INVOLVING THE LOWER EXTREMITIES. THREE PATIENTS EXHIBITED TRANSIENT BLANCHING OF THE OPTIC NERVE, ONE FACIAL NEURITIS AND HOMOLATERAL BRACHIAL NEURITIS. IN ONE HOSPITAL IN THE SOUTHWEST PACIFIC, (18) 16 PATIENTS WERE SEEN WITH SEVERE IRRITATIVE NEURITIS WITH HYPERALGESIA, HYPERHIDROSIS, AND INCREASE IN MUSCLE TONE WITH ACTUAL CONTRACTION OCCURRING IN BILATERALLY SYMMETRICAL AREAS, USUALLY THE FOREARM AND HAND. Milder forms of neuritis, occurring in 18 of 100 consecutive cases of malarial fever, presented only subjective manifestations with transient attacks of numbness and tingling. With recurrent attacks of malarial fever, the nervous symptoms increased. The majority of these cases were due to a mixed infection. Distinction had to be drawn between these neuritides and those following that almost ubiquitous tropical disease, cutaneous diptheria.

4. CARDIAC MALARIA—FUNCTIONAL CARDIAC DISORDERS, SUCH AS IRRITABLE HEART WITH TACHYCARDIA, PREMATURE BEATS, AND SYSTOLIC MURMURS, WERE, OF COURSE, NOT EXTREMELY RARE IN PATIENTS DURING MALARIAL ATTACKS OR BETWEEN RELAPSES. BUT TRUE ORGANIC CARDIAC CHANGES, SUCH AS CAUSE DEATH FROM MYOCARDIAL INFLAMMATION OR CAPILLARY INFARCTION, WERE EXTREMELY RARE (20). THESE GENERALLY OCCURRED IN INDIVIDUALS WITH MALARIA DUE TO P. FALCIPARUM. THE AUTHOR SAW TWO SUCH PATIENTS WHO DEVELOPED SEVERE CEREBRAL MALARIA IN THE COMBAT AREA, BOTH CASES CAUSED BY P. FALCIPARUM. ONE HAD AURICULOVENTRICULAR AND INTRAVENTRICULAR BLOCK AND THE OTHER A MODERATELY ENLARGED, POSSIBLY DILATED HEART. THE SUBSEQUENT FATE OF THESE SOLDIERS COULD NOT BE FOLLOWED. TWO OTHER PATIENTS WITH P. FALCIPARUM INFECTION DIED AT A NEARBY HOSPITAL. BOTH SHOWED AGGLUTINATION OF THE PARASITES ALONG THE CAPILLARY ENDOTHELIUM IN THE MYOCARDIUM (21). THIS EXPERIENCE LED TO THE SUSPICION THAT MICROSCOPIC CORONARY OCCLUSIONS MIGHT BE AS IMPORTANT A FACTOR IN FATAL P. FALCIPARUM CASES AS OCCLUSION OF CEREBRAL VESSELS.

5. RUPTURE OF THE SPLEEN—THIS WAS A RARE COMPLICATION CORRESPONDING WITH THE LOW INCIDENCE OF SPLENOMEGALY.

6. OCULAR COMPLICATIONS.—A FEW CASES OF IRIDOCYCLITIS COINCIDED WITH ATTACKS OF MALARIA. IN ONE PATIENT, TRANSIENT EDEMA OF THE CORNEA OCCURRED IN EACH OF TWO ATTACKS OF MALARIA DUE TO P. VIVAX IN THE MEDITERRANEAN THEATER.....

CHRONIC MALARIA

ALL OBSERVERS AGREED THAT IN THE ABSENCE OF OTHER FACTORS, SUCH AS CONCOMITANT INFECTION OR MALNUTRITION, THE CLASSICAL TEXTBOOK PICTURE OF CHRONIC MALARIA WAS WASTING, ANEMIA, AND SPLENIC ENLARGEMENT. IT WAS NOT OBSERVED IN THE U.S. ARMY, WHERE TROOPS WERE WELL FED AND GIVEN ADEQUATE SUPPRESSIVE THERAPY. THE EXTRAORDINARILY LOW INCIDENCE OF SPLENOMEGALY AND ANEMIA HAS ALREADY BEEN DISCUSSED. DUE SIGNIFICANCE MUST BE ACCORDED THE ROLE OF HYDRATION AND OF SLIGHT LOSS OF WEIGHT AS EARLY ADAPTIVE PROCESSES ATTENDING ACCLIMATIZATION TO THE TROPICS—THE FORMER MIGHT SUGGEST ANEMIA; THE LATTER, WASTING (24). IN CONTRAST TO THE NATIVE WITH CHRONIC MALARIA, EXHIBITING THE CHARACTERISTIC TRIAD OF INTERMITTENT FEVER, ANEMIA, AND SPLENIC ENLARGEMENT, THE U.S. ARMY PATIENTS WHO WERE INCAPACITATED BETWEEN RELAPSES PRESENTED COMPLAINTS GENERALLY FALLING INTO FOUR CATEGORIES: (1) NEUROCIRCULATORY ASTHENIA, (2) SYMPTOMS REFERABLE TO THE MUSCULOSKELETAL SYSTEM, (3) VAGUE SYMPTOMS REFERABLE TO THE CENTRAL OR AUTONOMIC DIVISIONS OF THE NERVOUS SYSTEM, AND (4) COMBINATIONS OF TWO OR MORE OF THESE THREE GROUPS (25).

A CAREFUL STUDY WAS MADE OF A VERY LARGE NUMBER OF SOLDIER SUFFERING FROM REPEATED P. VIVAX RELAPSES AND WHO COMPLAINED OF NOT FEELING UP TO THEIR USUAL HEALTH BETWEEN ATTACKS (26). THESE MEN DESCRIBED THE FOLLOWING SYMPTOMS: WEAKNESS, FATIGABILITY, TENSION, EXCESSIVE SWEATING, HEADACHES, EXERTIONAL DYSPNEA, ANOREXIA, PALPITATION, BLACKOUTS, INSOMNIA, NERVOUSNESS, SPLENIC PAIN, MUSCLE PAIN, INDIGESTION, AND URINARY FREQUENCY.....

CLAIMS FOR CORONARY DISEASE BY OR ON BEHALF CF POW/FE (FAR EAST)
by D. Fitzgerald Moore, M.R.C.S.,L.R.C.P.,D.T.M.&H. & D.E. Twining, M.D.,M.R.C.S.,L.R.C.P.
ENGLAND 1963

...ABOUT ONE-THIRD OF PRISONERS OF WAR, FAR EAST (POW/FE) DIED IN CAPTIVITY, MAINLY FROM NUTRITIONAL CAUSES.

THE DIET WAS DEFICIENT IN THIAMIN, RIBOFLAVIN, NICOTINIC ACID, PANTOTHENIC ACID, PYRIDOXIN, CHOLINE, AND OF OTHER B VITAMINS THOUGH TO LESSER DEGREE IN FOLIC ACID, B.12, INOSITOL AND BIOTIN; IN PROTEIN INCLUDING ESSENTIAL AMINO-ACIDS; IN INGESTED FAT INCLUDING E.F.A. THERE WERE LIMITED DEFICIENCIES OF VITAMINS A,C, & E AND OF MINERALS.

THE FOLLOWING CLINICAL CONDITIONS WERE DESCRIBED: BERI-BERI, ARIBOFLAVINOSIS,"THE BURNING FOOT" (AND HANDS) SYNDROME, PELLAGRA, NEUROLOGICAL CONDITIONS (WERNICK'S BERI-BERI ENCEPHALITIS, PELLAGROUS ENCEPHALOPATHY, NUTRITIONAL RETROBULBAR NEURITIS, NUTRITIONAL NERVE DEAFNESS, NUTRITIONAL ATAXIA OR SPASTICITY), "CAMP DIZZINESS", A MYASTHENIC CONDITION, NUTRITIONAL GASTRO-ENTERITIS AND DIARRHOEA, "RICE TYMMY", HYPOGLYCAEMIA, HEPATIC INJURY AND RENAL DAMAGE; RENAL STONES; ENLARGEMENT OF SALIVARY AND PAROTID GLANDS AND ORCHITIS; GYNAECOMASTIA; "BLOOD BLISTERS"; NUTRITIONAL TROPICAL ULCERS, PROTEIN ODEMA, AND POSTURAL DEFECTS; TOXIC FOOD ALLERGIES AND SO FORTH.

OF TROPICAL AND OTHER DISEASES: MALARIA, (BT AND ST), AMOEBIC AND BACILLERY DYSENTERIES; HELMINTHIC INFECTIONS AND ECTO-PARASITIC INFESTATIONS; DIPHTHERIA, CHOLERA, AND SMALL-POX EPIDEMICS; DIPHTHERITIC SKIN ULCERS, SEPTIC SKIN, EAR, NOSE AND THROAT COMPLAINTS; GENITO-URINARY INFECTIONS, SOME OF MARKED CHRONICITY; INFECTIVE HEPATITIS; PULMONARY TUBERCULOSIS, PNEUMONIA, BRONCHITIS AND SO FORTH.

THERE WAS PROLONGED STRESS.

THERE WERE A NUMBER OF CONDITIONS, THE CAUSES OF WHICH WERE UNKNOWN. THE MORE VISIBLE ACTIVE SIGNS OF THE TROPICAL NUTRITIONAL DISEASES RAPIDLY DISAPPEARED ON RETURN TO NORMAL FOOD. LOST WEIGHT WAS QUICKLY REGAINED, SOMETIMES TOO RAPIDLY.

EFFECTS REMAINED. OF THESE A PARTIAL OPTIC ATROPHY WHICH HAD FOLLOWED A NUTRITIONAL RETROBULBAR NEURITIS IS AN EXAMPLE OF AN IRREVERSIBLE, BUT NON-PROGRESSIVE STATE AND EASY TO DIAGNOSE. ON THE OTHER HAND LIVER CIRRHOSIS WHETHER NUTRITIONAL OR VIRUS IN ORIGIN IS ONE OF A LATENT CONDITION THAT MAY HAVE TAKEN MANY YEARS BEFORE FIRST BECOMING MANIFEST AND WHICH IS STILL BEING DEMONSTRATED IN POW/FE.

OTHER EFFECTS MAY NOT BE DISCERNABLE IN LIFE.

THE MULTIPLICITY OF DEFICIENCY AND OTHER DISEASES, THE LONG DURATION OF CAPTIVITY, AND LACK OF TREATMENT HAVE COMBINED TO CREATE PROBLEMS OF GREAT COMPLEXITY AND DIFFICULTY IN ASSESSING EFFECTS. IT IS NOT MADE EASIER THAT NUTRITIONAL DISEASE MANUALS AND TROPICAL TEXT BOOKS DO NOT COVER EFFECTS OF A COMBINATION OF NUTRITIONAL DISEASES, PARTICULARLY IN ONE AND THE SAME PERSON. NOTHING IS TO BE FOUND OF THEIR EFFECT ON OTHER DISEASES, AND SO INFLUENCING IN THAT ASPECT EXPECTATION OF LIFE.....

"THE CHRONIC CCNDITIONS WHICH ARE NOTICEABLY PRESENT AND PERSISTENT IN PW'S ARE TUBERCULOSIS, RESIDUALS OF MALNUTRITION, PSYCHONEURCSIS, OPHTHALMIC CHANGE, GASTROINTESTINAL DISORDERS AND CARDIO-VASCULAR CONDITICNS.".....

RAISED BLOOD PRESSURE, "BURNING FOOT" SYNDROME, KIDNEYS & GENITO-URINARY
by Ancel Keys (Jolliffe's Clinical Nutrition 1950)

"WHEN REASONABLY GOOD DIETS ARE RE-INTRODUCED AFTER SEVERE UNDER-NUTRITION THERE IS EVIDENCE THAT THE INCIDENCE OF DIABETES AND HYPERTENSION INCREASES BEYOND THE NORMAL (PRE-STARVATION) LEVEL. AFTER THE RELIEF OF THE SIEGE OF LENINGRAD (1941-42), THERE WAS A VERITABLE EPIDEMIC OF HYPERTENSION, AND SOMEWHAT SIMILAR FINDINGS HAVE BEEN REPORTED IN REPATRIATED WAR PRISONERS AND INTERNEES FROM THE EAST."

ALL ORGANS THYROID, PARATHYROID AND PITUITRY

(a) EXCEPTING DEFICIENCY OF IODINE IN THE SOIL AS A CAUSE OF ENDEMIC GOITRE, TROPICAL INVESTIGATIONS APPEAR TO HAVE BEEN VERY LIMITED EXCEPT FOR MCCARRISON'S WORK.

(b) SEALE HARRIS IN HIS CLINICAL PELLAGRA REPORTS RESPONSE TO TREATMENT WITH ANTERIOR PITUITARY EXTRACT IN SOME CASES OF REFRACTORY PELLAGRA.

(c) VERNON, S.(P) (NUTRITIONAL MELALGIA, A DEFICIENCY VASCULAR DISEASE, J. AM. MED. ASS. 1ST JULY 1950) EXPRESSES THE OPINION THAT THE FREQUENCY OF MICTURITION AMONG POW/FE WAS ASSOCIATED WITH PITUITRY DISTURBANCE.

PANCREAS

IN THE KWASHIORKOR^{*} SYNDROME THE PANCREAS IS EXTENSIVELY INVOLVED. MAIN INVESTIGATIONS HAVE BEEN CONDUCTED BY TROWELL AND DAVIES, J.N.P.. IT WAS WIDELY REVIEWED AND DISCUSSED AT THE MEETING OF THE JOHN MACY FOUNDATION IN NEW YORK 1950.

VEGHLELYI IN BUDAPEST DISCUSSING "MELNASCHRADEN", THE EUROPEAN COUNTERPART OF KWASHIORKOR HAS MADE SIMILAR OBSERVATIONS.

THERE IS LITTLE DOUBT THAT THE PANCREAS WAS AFFECTED BY A NUMBER OF NUTRITIONAL CONDITIONS OF POW/FE, OF WHICH NUTRITIONAL DIARRHOEA WAS ONLY ONE MANIFESTATION. SEE ALSO REFERENCES TO MAINZER, REFERENCE PELLAGRA AND INSULIN-HYPERSENSITIVITY IN SECTION ON THE ADENAL GLANDS WHICH FOLLOWS "LIVER".

LIVER

THERE IS AN IMMENSE TROPICAL NUTRITIONAL LITERATURE DATING BACK TO CASALS. FEW TROPICAL CLINICIANS CAN POSSIBLY IGNORE ITS PLACE IN THIS FIELD OF MEDICINE AND GENERAL REFERENCES ARE TOO MANY TO NEED QUOTING HERE. OF MORE PARTICULAR INTEREST PERHAPS ARE THOSE OF SELLERS E.A., LUCAS C.C., BEST C.H. (LIPOTROPHIC FACTORS IN EXPERIMENTAL CIRRHOSIS BRIT. MED. J. 5th JUNE 1948); BEST C.H., HARTROFT W.S., LUCAS C.C., RIDOUT J.H. (LIVER DAMAGE PRODUCED BY FEEDING ALCOHOL OR SUGAR & ITS PREVENTION BY CHOLINE, BRIT. MED. J. 5TH NOVEMBER 1949); WILGRAM G.F., HARTROFT M.D. AND BEST C.H. (DIETARY CHOLINE & THE MAINTENANCE OF THE CARDIO-VASCULAR SYSTEM IN RATS); ALSO OF THE WELL-KNOWN WORK OF WILLIAMS C., TROWELL & DAVIES J.N.P., WATERLOW & OTHERS IN THE CLINICAL FIELD.

CIRRHOSIS OF THE LIVER AS A SEQUEAL TO LIVER DAMAGE, DUE TO VIRAL AND NUTRITIONAL CAUSES HAS BEEN A FEATURE IN THE FOLLOW-UP OF POW/FE SURVIVORS, MANIFESTATION APPEARING YEARS AFTER RELEASE. A CONSIDERABLE PROPORTION OF FATAL CASES HAD NEVER BEEN NEAR ANY HOSPITAL AND DEATHS DRAMATICALLY SUDDEN, GENERALLY IN SUCH CASES FROM RUPTURED OESOPHAGEAL VARICES.

IT SEEMS CERTAIN THERE WILL BE MORE WHILE OTHERS SUBSEQUENTLY COMING TO A POST-MORTEM TABLE WILL SHOW EVIDENCE OF CONSIDERABLE DAMAGE. NOT ONLY DO SUCH CASES ILLUSTRATE LONG TERM LATENT EFFECTS DUE TO POW/FE BUT THE VALUE OF COLLECTIVE MORBIDITY AND MORTALITY FOLLOW-UP STATISTICS FOR THERE IS INCREASING EVIDENCE THEIR DEVELOPMENT CAN TAKE MUCH LONGER THAN FORMERLY ACCREDITED TO THIS CONDITION.

THE ADRENAL GLANDS

IT WILL BE READILY AGREED THAT DAMAGE ESPECIALLY TO THESE COULD BE OF GREAT SIGNIFICANCE IN RELATIONSHIP TO THE CARDIO-VASCULAR SYSTEM, AND AGAIN FOR POW/FE PARTICULARLY REGARDING SOME LONG-TERM EFFECTS.

MCCARRISON, R. (STUDIES IN DEFICIENCY DISEASES 1920) IN EXPERIMENTAL WORK ON BERIBERI FOUND OEDEMA CONSTANTLY ASSOCIATED WITH GREAT ENLARGEMENT OF THE ADRENAL GLANDS. THE WEIGHT OF THESE GLANDS, THEIR EPINEPHRINE CONTENT AND TOTAL AMOUNT OF EPINEPHRINE PER KILOGRAM OF BODY WEIGHT IS MUCH GREATER IN WET POLYNEURITIS THAN IN HEALTH OR DRY POLYNEURITIS.

MAINZER, FR. (INSULIN-HYPERSENSITIVITY IN PELLAGRINS AND ITS SIGNIFICANCE. TRANS. ROY. SOC. TROP. MED. & HYG. NOVEMBER 1949) REFERS TO DAMAGE TO ADRENALS IN PELLAGRA (ASCHOFF 1933. FROBOESE & THOMA 1933, HERTENBURG 1935). REGULAR OCCURRENCE OF GROSS ANATOMICAL AND HISTOLOGICAL DAMAGE TO THE ADRENALS IN THIAMIN DEFICIENCY (FUNK 1919, MCCARRISON 1921,

* KWASHIORKOR-(AFRICAN GOLDEN BOY) A DISEASE RESULTING FROM A DEFICIENCY OF PROTEIN IN INFANCY OR EARLY CHILDHOOD.

VERZAR AND BEZNAK 1923, FINDLAY 1928). INCREASE IN WEIGHT, NECROSIS AND HAEMORRHAGE IN THE CORTEX AS A RESULT OF PANTOTHENIC ACID DEFICIENCY (DAFT & SEBRELL 1939, MILLS 1940, MORGAN & SIMS 1940, SUPPLEE 1940, MCQUEEN 1947).

SMITSKAMP, H. (P) IN HIS REPORT 1947 DISCUSSING THE "BURNING FOOT" SYNDROME MADE THIS COMMENT:

"THE DISCUSSION OF THE POSSIBLE INFLUENCE OF HORMONAL DISTURBANCE IS BEYOND THE SCOPE OF THIS PAPER."

LIVER INJURY (JOHN MACY FOUNDATION 1950) REFERS TO ADRENAL DAMAGE IN KWASHIORKOR, VIZ LOSS OF PIGMENT IN THE CORTEX AND CHANGES IN THE MEDULLA. SPECIAL REFERENCE TO TROWELL'S WORK BY DAVIES, J.N.P. WHO SPEAKING ON BEHALF OF BOTH STATED HOWEVER THEIR OWN WORK IN THIS RESPECT WAS NOT ADVANCED.

VERNON, S. (P) (J. AM. MED. ASS. 1st JULY 1950). 30% OF POW/FE CABANATUAN (PHILLIPINES) DEVELOPED BREAST MODULES. HE CONSIDERED THAT THE CAUSE WAS--

"EXCESS OESTROGENS BEING ELABORATED IN THE BODY IN ABSENCE OF ADEQUATE SUPPLIES OF THIAMIN."

THE SAME AUTHOR DISCUSSING THE CAUSE OF "BURNING FEET" STATES:

" A THEORETIC CONSIDERATION WHEN VASOSPASM IS CONCERNED IS THE ADRENO-CORTICAL FACTOR.. ONE IS ENTITLED TO SPECULATE ON THE POSSIBILITY OF AN ALTERATION IN STEROID CHEMISTRY BY THE STRESS OF STARVATION PLUS OTHER PRIVATIONS."

GYNAECOMASTIA HAS OF COURSE BEEN OBSERVED BY MANY CLINICIANS, AS AN ACCOMPANIMENT TO LIVER DAMAGE AND ASCRIBED TO INABILITY OF THE LIVER, TO INACTIVATE OESTROGENS. RIBO-FLAVIN DEFICIENCY IS CITED BY ELVEJEHM AS A FACTOR.....

SUBMISSION TO THE PARLIAMENTARY COMMITTEE ON VETERANS AFFAIRS BY THE WIVES & WIDOWS OF THE NATIONAL POW ASS. (EUROPEAN THEATRE) ON PENSIONS & WIDOWS BENEFITS CANADA 1977

WE FEEL THAT THE P.O.W. AT THE TIME OF HIS DISCHARGE WAS NOT PHYSICALLY OR MENTALLY TOTALLY RESPONSIBLE FOR HIS OWN WELFARE, NOR WAS HE FULLY INFORMED AS TO POSSIBLE AFTER-EFFECTS OF INCARCERATION, OR BENEFITS THAT MIGHT BE AVAILABLE TO HIM. IT IS GRANTED THERE WAS A MARKED URGENCY TO RECEIVE THAT DISCHARGE PAPER-MANY TIMES RESULTING IN TEMPORARILY OVERLOOKING SOME COMPLAINTS.....

THE FOLLOWING FIGURES COMPARE THE INVOLVEMENT OF THE FIVE MOST PREVALENT DISEASES ON THE BASIS OF NATIONAL AVERAGE AGAINST A REPRESENTATIVE NUMBER OF P.O.W.s.

	MALE AVERAGE AGE 44 - 64	MALE EX-P.O.W. AGE 44 - 64
HEART	9.7%	25%
CANCER	1.3%	13%
DIABETES	.4%	9%
ULCERS	4.5%	35%
ARTHRITIS	14.8%	20%

THE ABOVE STARTLING FIGURES ARE BASED UPON CORRESPONDENCE WITH WIVES OF 100 EX-P.O.W.s. THEY WERE ASKED TO GIVE MEDICAL COMPLAINTS OF THEIR HUSBANDS THAT COULD BE SUPPORTED BY THEIR FAMILY PHYSICIANS.

IN ADDITION THE SAME LETTERS SHOWED THAT 80% HAVE NERVOUS DISORDERS AND 45% HAVE SEVERE SLEEPING PROBLEMS DATING BACK TO P.O.W. LIFE.

THE INVOLVED DOCTORS FELT THESE TWO PROBLEMS ALONE COULD LEAD TO, OR AGGRAVATE HYPERTENSION WITH ITS CLOSE RELATION TO HEART PROBLEMS OR CEREBRAL-VASCULAR ACCIDENTS (STROKES) .

EARLY DEATHS: DR. HERMANN AND OTHER REPORTS ON P.O.W.s STATE THAT THESE MEN HAVE PRE-AGED, DYING AT AN EARLIER AGE THAN AVERAGE.....

PREMATURE AGEING, WHICH HAS BEEN RECOGNIZED AS ONE RESULT OF PRISONER OF WAR LIFE, HAS BEEN RESPONSIBLE TO A GREAT DEGREE FOR THE INCREASE IN ARTHRITIC INVOLVEMENT. THIS HAS BEEN SHOWN TO BE 2 TO 3 TIMES GREATER AMONG FORMER PRISONERS THAN AMONG THE GENERAL PUBLIC IN THE SAME AGE GROUP.

21ST INTERSCIENCE CONFERENCE ON
ANTIMICROBIAL AGENTS AND CHEMOTHERAPY

CONRAD HILTON HOTEL
CHICAGO, ILLINOIS
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TITLE OF PAPER: CHRONIC STRONGYLOIDIASIS IN
WORLD WAR II EX-PRISONERS OF WAR

BACKGROUND:

DURING WORLD WAR II, A GROUP OF BRITISH, AUSTRALIAN AND AMERICAN PRISONERS OF WAR WORKED ON THE CONSTRUCTION OF A BURMA-THAILAND RAILROAD UNDER EXTREME CONDITIONS OF MALNUTRITION, POOR SANITATION, AND EXPOSURE TO TROPICAL DISEASES. AT THE CONCLUSION OF THE WAR, BRITISH POWs FROM THIS GROUP WERE FOUND TO HAVE RECURRENT CREEPING SKIN RASHES AND GASTROINTESTINAL COMPLAINTS DUE TO THE INTESTINAL PARASITE - STRONGYLOIDES STERCORALIS: BUT THE INFECTIONS WENT UNTREATED SINCE NO EFFECTIVE MEDICATION WAS AVAILABLE AT THAT TIME.

IN 1967, THE DRUG THIABENDAZOLE WAS SHOWN TO BE EFFECTIVE IN ELIMINATING CHRONIC STRONGYLOIDIASIS INFECTIONS. HOWEVER, THERE WAS NO SYSTEMATIC ATTEMPT TO FOLLOW UP AND TREAT SOLDIERS THAT HAD ACQUIRED THE DISEASE DURING WORLD WAR II UNTIL THE 1970's WHEN GEOFFREY V. GILL AND DION R. BELL AT THE LIVERPOOL SCHOOL OF TROPICAL MEDICINE FOUND THAT STRONGYLOIDIASIS WAS THE MOST COMMON, ACTIVE, LONG-TERM HEALTH PROBLEM IN FORMER WORLD WAR II PRISONERS OF WAR, WHEN EXAMINED FOR PENSION BENEFITS. GILL AND BELL SHOWED THAT 44 of 206 (21.4%) OF EX-POWs THAT WORKED ON THE BURMA-THAI RAILROAD STILL HAD STRONGYLOIDES LARVAE IN THEIR STOOL, AND THAT THE STRONGYLOIDES CAUSED RECURRENT SKIN RASHES. D.I. GROVES STUDIED 160 FORMER MEMBERS OF AN AUSTRALIAN MACHINE GUN BATTALION LIVING IN THE PERTH METROPOLITAN AREA, ALL OF WHOM WORKED ON THE BURMA-THAI RAILROAD. GROVE REPORTED IN THE BRITISH MEDICAL JOURNAL IN 1980 THAT 44 MEN (27.5%) STILL HAD STRONGYLOIDIASIS ASSOCIATED WITH RECURRENT CREEPING SKIN ERUPTIONS, HIVES, DIARRHEA, INDIGESTION AND ABDOMINAL PAIN.

UNLIKE MANY TROPICAL PARASITIC INFESTATIONS THAT HAVE A DEFINITE LIFE SPAN, STRONGYLOIDES STERCORALIS INFECTIONS ARE SELF-PERPETUATING DUE TO A PROCESS OF AUTOINFECTION. THE INITIAL INFECTION IS ACQUIRED WHEN STRONGYLOIDES LARVAE PENETRATE BARE SKIN EXPOSED TO SOIL CONTAMINATED WITH HUMAN FECES. THERE IS NO TRANSMISSION FROM PERSON-TO-PERSON. THE ADULT FEMALE WORMS (2mm long) RESIDE IN THE SMALL INTESTINE AND LAY EGGS THAT HATCH WITHIN THE GUT RELEASING LARVAE THAT RAPIDLY MATURE INTO AN INFECTIVE MICRO-

SCOPIC WORMS (0.7 mm long) THAT CAN PENETRATE THE SKIN AROUND THE RECTUM. AS THE LARVAE MIGRATE UNDER THE SKIN THEY MAY PRODUCE HIVES AND RAISED RED TRAVELLING LINES CALLED "CREEPING ERUPTION". THE LARVAE PASS VIA THE CIRCULATORY SYSTEM TO THE LUNGS WHERE THEY PENETRATE THE AIR SACS, AND ASCEND THE AIRWAYS TO THE BACK OF THE THROAT, WHEN THEY ARE SWALLOWED. AFTER PASSAGE THROUGH THE STOMACH THE WORM LODGES IN THE PROXIMAL SMALL INTESTINE WHERE IT PRODUCES EGGS THAT MAY INITIATE A NEW CYCLE OF AUTOINFECTION, IRRITATION OF THE SMALL BOWEL PRODUCES DIARRHEA, INDIGESTION, OR ABDOMINAL PAIN. IN RARE INSTANCES, THE BODY'S DEFENSE MECHANISMS AGAINST THE WORMS MAY BREAK-DOWN AND THE PARASITE MULTIPLES UNCHECKED WITH MASSIVE NUMBERS OF WORMS INVADING TISSUES. THIS OFTEN FATAL "HYPERINFECTION SYNDROME" IS USUALLY ASSOCIATED WITH STARVATION AND CANCER CHEMOTHERAPY. THE HYPERINFECTION SYNDROME IS RARE IN THIS COUNTRY.

CURRENT STUDY RESULTS

THE 2nd BATTALION OF THE 131ST U.S. ARMY FIELD ARTILLERY AND SURVIVORS OF THE SUNK CRUISER U.D.D. HOUSTON WERE CAPTURED BY THE JAPANESE ON JAVA IN 1942, AND SUBSEQUENTLY WERE SENT TO WORK ON THE BURMA-THAILAND RAILROAD. IN ORDER TO DETERMINE WHETHER CHRONIC STRONGYLOIDES INFECTIONS IS STILL A PROBLEM FOR THESE MEN IN 1981, AS IT WAS FOR A QUARTER OF THEIR BRITISH AND AUSTRALIAN CO-WORKERS, WE CONTACTED ALL 530 KNOWN SURVIVORS. NINETY OF THESE INDIVIDUALS REPORTED RECURRENT CREEPING SKIN ERUPTIONS OR HIVES SINCE WORLD WAR II. ALL VETERANS WITH SKIN LESIONS MAILED 8 FORMALIN PRESERVED STOOL SPECIMENS TO US FOR MICROSCOPIC EXAMINATION. TO DATE WE HAVE FOUND STRONGYLOIDES STERCORALIS LARVAE IN THE STOOL OF 43 VETERANS (43/90, 48%). THIRTY-EIGHT (38) OF THE 43 MEN RETURNED QUESTIONNAIRES. THE FOLLOWING DATA IS COMPILED FROM THOSE QUESTIONNAIRES.

THIRTY-TWO (32) OF 38 (84%) HAD RECURRENT CREEPING SKIN ERUPTIONS AND 6 OF 38 (10%) HAD RECURRENT HIVES. THE MEN AVERAGED 20 EPISODES OF ITCHY RASH PER YEAR WITH EACH EPISODE LASTING 5 TO 6 DAYS. THE RASH WAS LOCATED BETWEEN THE NECK AND KNEES, BUT MAINLY IN THE PERIRECTAL REGION AND ALONG THE BELT LINE. OVER HALF HAD A HISTORY OF RECURRENT HEART BURN, ABDOMINAL PAIN, INDIGESTION, AND NAUSEA POSSIBLY RELATED TO THE INTESTINAL PARASITES.

SINCE THESE VETERANS ARE LOCATED IN 15 STATES, TREATMENT WITH THIABENDAZOLE WAS ARRANGED AT THE VETERANS ADMINISTRATION MEDICAL CENTER CLOSEST TO EACH VETERAN. WE ARE CURRENTLY TESTING TO SEE IF TREATMENT HAS ELIMINATED THE PARASITE AND HAS IMPROVED SYMPTOMS AMONG THE U.S.S. HOUSTON AND 131ST BATTALION SURVIVORS TO SEE HOW MANY SILENT INFECTIONS ARE PRESENT.

SIGNIFICANCE OF STUDY

WE HAVE FOUND A HIGH PERCENTAGE OF INFECTED INDIVIDUALS IN A GROUP OF EX-PRISONERS OF WAR WHO HAVE SUFFERED FROM AN UNRECOGNIZED PARASITIC INFECTION FOR OVER 35 YEARS. DUE TO THE UNFAMILIARITY OF MOST PHYSICIANS IN THIS COUNTRY WITH STRONGYLOIDES STERCORALIS AND THE DIFFICULTY IN ESTABLISHING A DIAGNOSIS BY STOOL EXAMS, IT IS POSSIBLE THAT OTHER VETERANS WHO SERVED IN SOUTHEAST ASIA DURING WORLD WAR II, THE KOREAN CONFLICT, AND THE VIETNAM WAR MAY ALSO HAVE UNRECOGNIZED STRONGYLOIDES INFECTIONS.

ALL OF US ARE GRATEFUL FOR DR. LAWRENCE L. PELLETIER, JR. AND HIS COLLEAGUES FOR THEIR OUTSTANDING EFFORTS AND DEDICATION ON OUR BEHALF.

Reports of Cases

CIRRHOSIS OF THE LIVER IN EX-PRISONERS OF WAR (JAPAN): A PRELIMINARY COMMUNICATION.

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Hepatomegaly in ex-prisoners of war (Japan) is a not uncommon finding. It is frequently associated with dyspepsia and general malaise, and when there is tenderness of the enlarged liver, together with episodes of fever, and particularly when there is looseness of the bowels or frank diarrhoea, the condition is usually regarded as amoebic hepatitis and treated as such.

Although at times great improvement may occur, frequently the response is disappointing, suggesting that amoebic infection is not the sole pathological lesion. In the four cases reported in this paper cirrhosis of the liver was suggested by the clinical and biochemical findings and confirmed by biopsy.

Case I.

A truck driver, aged thirty years, had been a prisoner of war in Malaya. During captivity he is recorded as having suffered from malaria, beriberi, ulcers of the legs, gastro-enteritis, amoebiasis and dermatitis. He had malaria on several occasions following his relapse. He was in the habit of drinking three or four glasses of beer per day and of smoking two or three ounces of tobacco per week.

He was admitted to hospital on October 12, 1950, with the complaint of soreness in the epigastrium for months, coming on two hours after meals, and unrelieved by food or alkalis. He complained also of vague general malaise but no nausea. He was passing two or three motions each day, of (he considered) normal consistency. He had noticed himself at times to be feverish at night.

On examination of the patient, the liver was enlarged three to four fingers' breadth below the right costal margin. The spleen was palpably enlarged. There were a considerable number of capillary angiomas over face, arms and chest.

On October 16, 1950, estimation of serum proteins showed a total of 8.1 grammes *per centum*. Of this, albumin comprised 3.9 grammes *per centum* and globulin 4.2 grammes *per centum*.

On October 20 the result of a cephalin cholesterol flocculation test was positive ("+++" in twenty-four hours).

On October 31 the Van den Bergh reaction was direct positive, the serum bilirubin content was 0.6 milligramme *per centum*, and there was a great increase in urinary urobilinogen.

On November 10 the patient's serum prothrombin value was 90% of normal, the serum alkaline phosphatase value was 22 King-Armstrong units, and the thymol turbidity test showed a value of eight units. Findings from a gastric test meal produced a normal curve.

On November 28 the patient's erythrocytes numbered 4,520,000 per cubic millimetre, and the haemoglobin value was 13.0 grammes *per centum*. There were 8300 leucocytes per cubic millimetre, of which 28% were neutrophile cells, 37% lymphocytes, 3% monocytes and 32% eosinophile cells.

On January 9, 1951, the erythrocytes numbered 4,780,000 per cubic millimetre, and the haemoglobin value was 14.2 grammes *per centum*. The leucocytes numbered 8300 per cubic millimetre, of which 41% were neutrophile cells, 38% lymphocytes, 2% monocytes and 19% eosinophile cells.

Radiological examination of the chest, including fluoroscopy, revealed no abnormality. With Graham's test the gall-bladder was not visualized. No calculus was seen. X-ray examination after barium meal and barium enema revealed no abnormality, and with barium bolus revealed no evidence of amphotageal varices.

On November 30, 1950, and on several subsequent occasions after antiamoebic treatment, vegetative forms of *Entamoeba histolytica* were found in the stools.

The results of Wassermann and Kline tests were negative.

On November 14, 1950, liver (needle) biopsy (E.G.M.) was performed. The histological appearances were reported on as follows: "Diffuse overgrowth of new connective tissue in portal tracts, which is active and progressive with much fibroblastic proliferation." (See Figure I.)

On January 2, 1951, because of a slight rise in temperature, exacerbation of upper abdominal pain and tenderness of a portion of the swollen liver margin, exploratory needling was performed. No pus was found.

A course of emetine treatment made no significant difference to his condition. He was kept at rest in bed and given a diet of high protein and low fat content with methionine supplement.

Case II.

The patient was an agricultural scientist. He too had been a prisoner of war in Malaya, and during captivity had suffered from malaria, beriberi (with affection of the heart in 1943 and 1945) and amblyopia. He was treated in hospital in December, 1945, and January, 1946, for symptoms considered then to be due to malaria. Hepatomegaly was recorded at that time. He was in hospital again in 1948 with a diagnosis of amoebic hepatitis. At that time also the diagnosis was made of "anxiety state." He was in the habit of drinking two or three glasses of beer per day. He was readmitted to hospital on December 13, 1950, when he complained of recurrent attacks of diarrhoea, weakness and depression, and of loss of appetite.

On examination of the patient the liver was enlarged three fingers' breadth below the right costal margin. The spleen was palpable.

On December 20, 1950, the total serum protein content was 7.1 grammes *per centum*, of which the albumin content was 3.2 grammes *per centum* and the globulin content 3.9 grammes *per centum*. The serum prothrombin value was 100% of normal, and the thymol turbidity test yielded a value of three units. On December 22 the result of a cephalin cholesterol test was positive ("+++" in twenty-four hours).

Between December 13 and December 22 examination of nine stools revealed no amoebae or cysts.

On December 19 X-ray examination after barium enema was carried out and the result reported as normal.

On December 22 sigmoidoscopy revealed no ulceration of the bowel, but a little blood-stained mucus was seen coming down from higher in the bowel.

On January 2, 1951, liver (needle) biopsy was performed (E.G.M.). The specimen obtained was reported on as follows: "Marked chronic inflammation and fibrous overgrowth in portal tracts." (See Figure II.)

A course of emetine treatment followed by "Yatren" enemata was given. With this, rest in bed and a diet of high protein and low fat content with methionine supplement his symptoms subsided and the liver seemed to become smaller.

Case III.

The patient was a timber worker, aged thirty-three years. During captivity in Malaya he had suffered from malaria, beriberi, dysentery and ankylostomiasis. He had been admitted to hospital on June 10, 1950, complaining of pain in the upper part of the abdomen during the previous two years. The liver was then found to be enlarged three fingers' breadth below the right costal margin and slightly tender. The spleen was reported to be just palpable.

Investigations at that time revealed the presence of hookworm ova in the stools. The results of tests for occult blood were also positive. No amoebae or cysts were found on several examinations. Blood count, X-ray examination after barium meal, and chest X-ray examination revealed no abnormality.

On June 17 he was given a "hookworm bomb" consisting of tetrachlorethylene, three millilitres, with oil of chenopodium, one millilitre, followed by magnesium sulphate, half an ounce. He was discharged from hospital two days later.

He was readmitted to hospital on August 14, 1950, when his presenting complaint was of yellowness of the skin for five or six weeks. He stated that at the beginning of July, 1950, he had noticed lassitude, headache and pains in the limbs. A few days later he had had pain in the right hypochondrium, his urine had become dark in colour and his stools "creamy." His skin had then become yellow and itchy, and he had suffered from nausea. The yellowness of the skin persisted, but at the time of admission he did not complain of nausea, although his appetite was poor. He did not complain of diarrhoea.

On examination he was seen to be jaundiced, the liver was enlarged four fingers' breadth below the right costal margin, and the spleen was palpable. There were capillary angiomas over the arms, face and chest, and there was pronounced palmar hyperaemia. On specific questioning he said he thought that some of the spider naevi had been present for the last two years.

On August 17 the serum bilirubin content was 13.0 milligrammes *per centum*, the thymol turbidity test yielded a value of 30 units, the urinary urobilinogen content was much increased. The serum alkaline phosphatase content was 28 King-Armstrong units. The red-cell fragility was normal.

On October 21 the serum proteins amounted to 7.6 grammes *per centum*, of which 3.4 grammes *per centum* were albumin and 4.2 grammes *per centum* were globulin.

On October 24 the prothrombin value was 80% of normal.

Examination of stools on three occasions did not reveal amoebae or cysts.

On October 24 liver (needle) biopsy was performed (E.G.M.). The specimen obtained was rather unsatisfactory, but served to show the presence of fibrotic change and some inflammatory cell infiltration.

The patient was treated by rest in bed and a diet of high protein and low fat content with methionine supplement, and improved considerably, his jaundice gradually disappearing.

Case IV.

A man, aged forty-four years, a farmer, had suffered during captivity in Malaya from malaria, dysentery, pellagra and hookworm. He stated that he consumed alcohol in moderation and smoked four ounces of tobacco per week.

He was admitted to hospital on May 15, 1950, when his presenting symptoms were soreness and swelling in the upper part of the abdomen for a period of twelve months. These were aggravated by lifting weights, by riding on his tractor, and by taking food. For twelve months he had noticed no blood or mucus in his motions. The patient stated that he had been subject to frequent bouts of malaise accompanied by joint pains. These he had attributed to malaria. During the last few attacks there had appeared a rash along the waistline, fading as the attack subsided.

On examination of the patient, the liver was enlarged two fingers' breadth below the right costal margin. There was an urticarial rash around the trunk at the waist. Apart from an apical systolic murmur there were no other significant clinical findings.

On May 29, 1950, the result of a cephalin cholesterol flocculation test was positive ("++" in twenty-four hours).

On June 2 the serum protein content was 7.0 grammes *per centum*, of which albumin amounted to 3.9 grammes *per centum* and globulin 3.1 grammes *per centum*.

Microscopic examination of the faeces revealed the presence of hookworm ova, but there were no amoebae or cysts.

The results of blood counts were within normal limits, and the result of an agglutination test for brucella was negative.

The findings from X-ray examination after barium meal and barium enema were negative.

On August 14, 1950, at the request of another physician, laparotomy was performed for biopsy of the liver. The findings at operation were as follows: "Markedly enlarged, nodular, firm liver, somewhat greyish in appearance. Cirrhotic changes are widespread. No ascites present, no other pathology noted in abdomen." A small wedge was taken from the lower edge of the liver. The histological report on this specimen, a portion of which is shown in Figure III, was as follows: "The liver cells and liver lobules look perfectly healthy, but the capsule is greatly thickened and fibrosed, and shows a cirrhotic change with proliferation of small bile ducts and some round-cell infiltration. The portal canals contain some round-cell inflammatory infiltration also."

Discussion

In Case III only was there a history of jaundice, and in this case there was evidence of liver damage before the hookworm treatment that precipitated it. In no case was there a history of excessive consumption of alcohol.

The experimental production of cirrhosis by dietary deficiency alone is now well known (Györgi and Goldblatt, 1939, 1942; Himsworth and Glynn, 1944; Abell *et alii*, 1950).

Work in a number of tropical and subtropical countries has shown the frequency of liver disease amongst the native populations (Fernando *et alii*, 1948; Trowell and Muwazo, 1945; Gillman and Gillman, 1945; Waterlow, 1947) and there seems little doubt that, although parasitic infections play some part, nutritional deficiency is the major aetiological factor.

The suggestion is offered that the cases of hepatic cirrhosis reported herewith are a sequel of nutritional deficiency during captivity. Case IV is particularly interesting in that although superficially the liver appeared to be grossly cirrhotic, section revealed the deeper areas to be essentially normal, a finding supported by the relative normality of hepatic function. This would suggest a lesion of the nature of that termed by Abell *et alii* "submassive necrosis," individual episodes of which were shown in their rats to be recoverable.

The object of this preliminary communication is to draw attention to cirrhosis as a cause of symptoms and of hepatomegaly in ex-prisoners of war. It is considered also that the potential dangers of anthelmintics in those subjects should be emphasized.

Acknowledgements

I wish to thank the Chairman of the Repatriation Commission, the Principal Medical Officer of Queensland, and the Medical Superintendent of the Repatriation General Hospital, Greenslopes, for permission to publish these cases; also Dr. W. G. Harvey for his assistance in the preparation of this preliminary communication, and particularly for having directed my attention to Case IV.

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The following report constitutes a general recital of the experiences and observations of five American medical officers who were prisoners of war of the Communists in Korea. No attempt has been made to present this material as a scientific study. The period of observation started in July, 1950, and continued until September, 1953, when the last group of prisoners of war was repatriated. A large part of the accumulated prisoner of war experience is included. Some of the smaller groups composed largely of men who were captured after Jan. 1, 1952, were not observed directly by any of the captured medical officers.

THREE PHASES OF CAPTIVITY

The entire period of captivity is divided into three general time phases. The first phase started with capture and ended with arrival in the first permanent camp. It was characterized by lack of food and shelter, forced marches, and exposure to the elements. Men were forced to march through snow storms without adequate clothing or foot covering. Food was supplied and prepared by the local inhabitants. Frequently there was no food for 24 to 72 hour periods. The only water available for drinking was snow or water from polluted sources, such as standing wells, creeks, and rice paddies. With few exceptions, the prisoners got to rear areas by marching and carrying the wounded, either on improvised litters or on their backs. Injuries resulting from prolonged marches and exposure to cold were common. Dysentery made its first appearance. Medical supplies were nonexistent, and treatment was limited entirely to first aid, using improvised splints and rag dressings. Most of the prisoners experienced severe mental depression.

The second phase began with the arrival at the first permanent camp and ended about October, 1951, when the first beneficial effects of the armistice negotiations were felt. This was a phase of profound deprivation of all the necessities of life. The diet was grossly inadequate. The Thanksgiving, 1950, meal of one group of 500 men furnishes a typical example. Each man received a millet ball weighing less than 200 gm., and the whole group was given soup prepared by boiling nine heads of cabbage in water. Group sanitation and personal hygiene were at their lowest levels. The men were housed in small, unheated overcrowded vermin-infested Korean farm houses. No clothing was issued until July, 1951. Medicine and medical care were inadequate, and morale reached its lowest ebb. In the face of all these conditions, sickness and death became the order of the day.

The third phase began in October, 1951, with gradually increasing quantities of food, clothing, and medicine. This period was characterized by many fluctuations in the attitude of the captors toward the prisoners, which appeared to follow changes in the political situation and the armistice conference. The diet remained inadequate in protein and vitamin content. Housing was gradually improved to a point of relative comfort, and clothing was sufficient for survival. Sanitary conditions, while never good, underwent a gradual improvement. Medical care never became adequate. Avitaminoses were prevalent.

MEDICAL CARE

The health of all United Nations' prisoners was neglected throughout the period of captivity. Before the onset of armistice negotiations the Communists showed no uniform desire to keep the prisoners alive. By the spring of 1951 the food shortage had become so acute that weeds growing adjacent to the prison compound were boiled and eaten. Most of the serious disease epidemics occurred during the first year of captivity. Pneumonia and dysentery were epidemic at this time. Some of the captured medical officers were allowed to see patients. Medical and surgical supplies, however, were doled out on a day-to-day basis. The so-called hospital compounds were frequently the coldest buildings in the camp. The patients slept and lived on the floors of these filthy, crowded compounds. It was common for them to awaken in the morning and find that the man sleeping on either side had died during the night. No provision was made for the prisoners to be properly clothed, and their diet was always poor. At times they were put on a special diet consisting of an unseasoned preparation of soupy rice.

Penicillin and the sulfonamides were available sporadically and in such small quantities that it was not possible to treat all who needed these drugs. On one occasion we were given 2 million units of aqueous

penicillin for the treatment of approximately 100 cases of pneumonia. Our captors refused to allow more than 6 gm. of sulfonamide for the treatment of any single pneumonia patient. Frequently, the only medicaments available were cough tablets for pneumonia and charcoal tablets for dysentery. Surgical problems were handled in an equally haphazard manner. It was necessary to wait several weeks to obtain a few surgical instruments and the barest minimum of anesthetic materials. Incision and drainage of abscesses was usually carried out without anesthesia, by using improvised instruments, such as a knife made from the arch of a combat boot.

Deaths—Virtually all of the deaths in the Communist prisoner of war camps were caused directly or indirectly by starvation, exposure, and the harassment by the enemy. The lack of medicaments was not the most important factor. During the first month or two of captivity most of the deaths occurred among the wounded. During the succeeding three to five months most of the men died either from pneumonia or dysentery, or from a combination of these two. After the first five or six months of captivity the majority of deaths occurred among persons suffering from pellagra or beriberi. During one five-month period there were between 5 and 28 deaths per day in one camp in North Korea. None of these men had illnesses that would have caused death had they been under normal conditions.

After October, 1951, the prisoners were put on a subsistence diet and were given sufficient clothing and reasonably warm housing. All of the men continued to suffer from periodic loss of day and night vision, and bleeding from soreness of the mouth and lips. There were occasional cases of pneumonia and dysentery. Sickness and death became so common during the first year and a half of captivity that the prisoners began to feel that any sickness would be fatal. In an attempt to overcome this attitude, the captured physicians coined a very unfortunate term, "give-up-itis." The use of this term had its desired immediate effect on the prisoners. It made them realize that the individual's fighting spirit had to be maintained at a high level for him to survive any illness. The term, "give-up-itis," has recently gotten wide circulation in the public press. The erroneous impression has been created that prisoners of war who were in good physical health gave up and died; this is not true. Every prisoner of war in Korea who died had suffered from malnutrition, exposure to cold, and continued harassment by the Communists. Contributing causes to the majority of deaths were prolonged cases of respiratory infection and diarrhea. Under such conditions, it is amazing, not that there was a high death rate, but that there was a reasonably good rate of survival.

Chinese Physicians.—During the summer and fall of 1951, all of the British and American doctors were gradually replaced by Chinese. Most of the Chinese doctors exhibited a wide range of medical incompetence. Most of them had a maximum of six months' formal schooling, and we saw only one physician who appeared to be well trained. The Chinese doctor who was put in the most responsible position was one who was best oriented politically. The average Chinese doctor who conducted sick call in the prisoner of war camps elicited only the chief complaint and prescribed medicine for symptomatic relief. It was a general rule that only one symptom would be treated at a time; therefore, if a patient suffered from night blindness and diarrhea, it was necessary for him to decide which of these complaints was bothering him more before he went on sick call. He would not be treated for both conditions.

The Communists introduced us to several unusual types of medical treatment. One Chinese doctor used a series of short needles attached to spring vibrators for the treatment of pain. The needles were placed in the skin around the painful area and then were made to vibrate. As one might suspect, some cases of back pain and headache were cured by this treatment. At one time a Chinese doctor decided that all of our visual disturbances were caused by glaucoma. He injected hypertonic sodium chloride solution subconjunctivally. Another notable treatment was used for avitaminosis. Bile was obtained from the gallbladders of pigs when they were butchered, and it was then dispensed to all who complained of vitamin deficiency diseases. This treatment had its desired effect in keeping patients away from sick call. In the summer of 1951 a great Russian panacea

was used in treating 56 seriously ill patients. This consisted of the subcutaneous transplant of small pieces of chicken liver that had been incubated in a weak solution of penicillin. These patients were immediately put on an attractive, high calory, high protein, high vitamin diet. In all cases, the chicken liver either sloughed through the operative site or became a hard, tender nodule. None of these men died, and we were thus allowed to witness another miracle of soviet medical science.

INDOCTRINATION

The most important single consideration that placed the prisoners of war in North Korea apart from any other group of American prisoners of war was Communist indoctrination. This indoctrination had a profound effect on the general health of the group. The medical profession and the American people as a whole have a great deal to learn from a study of the techniques, purposes, and effectiveness of Communist indoctrination as it was used on Americans in North Korea. There is no reason to believe that the Communist indoctrination techniques that were used on the prisoners of war were different in any way from the general pattern of indoctrination that is being used in Communist-dominated countries today. It is important to realize that every aspect of the daily life of the prisoner, from the moment of capture to the time of release, was part of the general plan of indoctrination. At the time of capture, each prisoner was given the general theme of indoctrination: "We are your friends. Your conditions of living are bad now, but we will work together to improve them. We will correct the errors in your thinking. Once you have learned the truth, we will send you back to your families."

Steps in Indoctrination—The first necessary step was to break down the normal resistance to an alien ideology. This was accomplished by keeping the prisoners cold, hungry, and in a state of disorganized confusion until each person realized that resistance meant starvation and death. It was emphasized repeatedly that the prisoners were no longer members of the armed forces of their nation, and all attempts to maintain a military organization were harshly punished. The planners of this indoctrination program did not condone the shooting of large numbers of prisoners. Instead, they resorted to starvation and exposure to cold. After a few months of this treatment the resistance of the survivors had softened. The second phase of indoctrination consisted of an intensive formal study program. For a period of approximately one year, most of the waking hours of the prisoners were spent in some form of supervised study. Food was gradually improved and more clothing was issued. It was made painfully clear to each prisoner that living conditions would be improved only so long as there was no resistance to the study program. The formal study program consisted of an endless repetition of two main themes; first, that the United States government is imperialistic, run by and for the wealthy few, and, second, that Communism reflects the aims and desires of all the people and is the only true democracy. The main propaganda technique that was used was ceaseless repetition of the main theme.

During the third phase all formal studies were stopped. The groundwork had been laid, and, to a large extent, the purposes of the indoctrination program had been fulfilled. Books, pamphlets, and newspapers became available in quantity. During this time, the Chinese conducted many individual and small group interviews. They attempted to find points of individual susceptibility on such grounds as race, religion, or economic status. The most intensive subject for special indoctrination was the bacteriological warfare hoax. Throughout the period of captivity there were many instances of individual brutality. Solitary confinement, beatings, withholding food and water, and exposure to cold were common punishments. Resistance leaders were taken away from the main body of prisoners and kept either in solitary confinement or in small groups of recalcitrants. No one escaped the indoctrination program. When a captured medical officer stated that he had no interest in politics, he was told, "Up to this time your education has been incomplete. You have only learned how to cure. We Communists will teach you whom to cure."

Purposes.—The indoctrination program had a two-fold purpose; first, the selection and conversion of susceptible persons, and, second, group neutralization. During the first year of captivity there was a continual regrouping of prisoners in an attempt to isolate resistance groups. They were separated according to rank and later according to national and racial groups. There were a few persons

who eventually accepted the Communist ideology, but they constituted only a small minority of any single group. The second purpose of indoctrination, group neutralization, was far more important and somewhat more successful. The Communists fostered discontent and distrust within the groups. So long as there was no unity of purpose, there could be no effective resistance.

COMMENT

The experiences of this group, therefore, form a valuable basis for the understanding of Communist aims and techniques. Most persons in the United States are probably guilty of a certain smugness about the possibility of Communism actually taking over our country. It is worth while to keep in mind two well-known facts: first, no country has ever been taken over by Communists because the majority of the people in that country wanted it; second, no country once it has been taken over by Communism has ever reverted to another form of government. Communist tyranny has been maintained by the application of indoctrination techniques similar in every respect to those that were practiced on the prisoners of war in North Korea. A relatively small group of Communists with a definite plan would have little difficulty in wresting power from a government that is paralyzed by a coalition of small groups concentrating on their own short-sighted self-interests.

The people of the United States must realize that the spread of Communism anywhere in the world, whether by armed aggression or by internal infiltration, constitutes a direct threat to our survival as a nation. Americans must work against Communism by being vigilant; they must work for democracy by constantly striving toward the democratic ideal of an enlightened people participating in their government. Physicians have an influence that is out of proportion to their numbers. That influence should be used to fight Communism by intelligently promoting democracy.

Read before the Section on Military Medicine at the 103rd Annual Meeting of the American Medical Association, San Francisco, June 24, 1954.

RESIDUALS OF JAPANESE PRISONERS-OF-WAR, - THIRTY YEARS LATER

Col. Eugene C. Jacobs, M.C., U.S. Army, Ret.*

The Bicentennial of the United States found it the richest, most productive and best fed country in the world. It has been a source of food for many other countries, including several who have not been friendly.

It is not surprising that chronic deficiency diseases and their residuals are rarely diagnosed in this country. When seen, they are usually secondary to other conditions, such as alcoholism, malignancy, mental illness, faddism or senility rather than starvation per se.

It is not surprising that our medical textbooks consider chronic deficiency diseases as rather mild, frequently reversible, and often without residuals. It is not surprising that our well-trained physicians diagnose chronic deficiency diseases only after all other conditions have been ruled out.

Seeing thousands of Americans with far-advanced acute and chronic deficiency diseases, is an experience unknown to most American doctors, unless they were so unfortunate as to be incarcerated in the Orient, as when the Japanese Imperial Army overran the Far East.

Shortly after the Naval catastrophe at Pearl Harbor on Dec. 7, 1941, President Roosevelt decided that it was more important to rescue England from Germany than to save our own Philippine Islands from Japan. Within hours, all military supplies including food, designated for the Philippines, were rerouted to other areas.

Within a few weeks (Jan. 11, 1942), it became necessary to reduce rations for all Fil-American Forces in Bataan. Several weeks later, rations for soldiers in the front lines and in fox holes had to be cut again.

Before the "Battling Bastards" of Bataan were overwhelmed by starvation, dysenteries, malaria and the Japanese Imperial Army on April 9, 1942, every gradation of acute deficiency diseases had already appeared. Within a month, a similar fate was suffered on Corregidor, but to a lesser degree.

The Japanese Army had made no preparation to feed, to transport or to house any of the Fil-American forces. The outcome was a hundred mile "Death March" from Bataan to Camp O'Donnell at Tarlac. This forced march lasted over a period of two weeks, and was made essentially without food or water, resulting in the inhumane annihilation of some 17,000 Fil-Americans, and the broken bodies of all survivors. Those captives, who couldn't keep up, were clubbed or bayoneted in full view of the others. During the following forty months of incarceration, another 31,200 prisoners were to succumb to starvation, deficiency diseases, dysenteries, malaria and Japanese indifference and neglect. The survivors were scarred for life, and most of their lives were shortened by many years.

THE PRISON CAMP DIET

A typical daily diet varied greatly. At the very best, it was almost never adequate, being composed of a poor grade of rice and weeds. A half-canteen cup (about 8 oz. or 160 calories) of a thin rice gruel (lugae) twice, and on occasion three times daily, was standard. The rice was a polished variety, but containing much foreign material, as insects and fine gravel. The weeds were from the water buffalo (carabao) wallows and were of questionable nutritional value. At worst, there were days when no food was available.

About once a week, a water buffalo was slaughtered by the Camp Veterinarian to feed some 5000 to 12000 prisoners in camp. After the Japanese chefs removed the choice cuts for themselves, there was never more than a few grams (4-16 calories) of protein for each prisoner. When we complained that "We will all die!" the Japs replied "Evelybody must die! Amelican submalines sink Japanese suppry ships! We have no food fol oul own tloops!"

* Formerly Chief of Medicine at the Hospital in Japanese Prisoner-of-War Camp No. 1 at Cabanatuan in the Philippine Islands.

Many of the prisoners suffered from amoebic and bacillary dysenteries and their bodies could absorb very little of the food they ate. Actually the prisoners who were taken out of camp on work-details were fortunate as they usually received extra food.

After some six months in camp, the captives were allowed to purchase extra food from the small camp commissary, but severe inflation of the Japanese paper money strictly limited purchases to a can of condensed milk and/or a small number of bananas or mung beans. Healthier prisoners planted small gardens, but had to guard them closely, as vegetables were frequently stolen before they were ripe.

At Christmas time in 1942, '3 and '4, one or two Red Cross packages (10 lbs. of food and tobacco) were issued to most prisoners. During 1944 no meat was available.

A few prisoners trapped stray dogs for extra food, and some became so hungry as to eat lizards, grasshoppers and earthworms. Even with food from every available source, the daily diet rarely reached 1000 calories. Fat and salt were almost never available.

During May, June and July of 1942, some 1287 Americans died in Cabanatuan P.O.W. Camp (No. 1). The death-rate continued as high as 20 to 50 per day until the arrival of the Red Cross packages (Christmas), when it miraculously dropped to one or two per month. After the end of the War, Graves Registration recovered 2637 bodies from Cabanatuan cemeteries.

PHYSICAL CRUELTY

Physical cruelty began with the seizure of the first captive and continued until the release of the last prisoner. "Slapping" with the hand, the rifle or the saber was a way of life with the Japanese. It was a part of their system of discipline. Adding language difficulties to this, the average Jap became a barbarian and a beast. If he merely suspected an infraction of the rules by a prisoner, one or more of the various types of Oriental torture could be expected. Many Japanese were openly sadistic, achieving considerable satisfaction and even delight in torturing their victims. Supreme delight was reached when the Jap had his captive kneel, and then with a long sweep of his samurai sword, beheaded him.

In general the Japs seemed to despise the American prisoners, blaming them for any and all problems that they encountered. They delighted in watching the prisoners labor under nearly impossible conditions, such as carrying loads well in excess of 100 lbs., farming barefooted, laboring for many hours without a break (Yasume), farming without being able to squat down, etc. etc.. The Japs had many ways of making ordinary labor as menial and unpleasant as possible.

Our treatment under that Japanese as P.O.W.s was certainly in marked contrast to that received by the Japanese, whom the United States interned. We enjoyed none of the good food, good clothing, good shelter or good medicines that the Americans gave their prisoners.

PRISONER-OF-WAR RESIDUALS

Following World War II, an adequate diet supplemented with required vitamins, resulted in rapid improvement of most of the acute symptoms of deficiency diseases, but most Japanese P.O.W.s of six months or more were left with one or more of the following residuals:¹⁻⁶

Amblyopia	hyperesthesia (burning feet)	Neuralgias
angina	impaired memory	nightmares
arrhythmia	insomnia	nyctalopia
congestive Heart Disease	irritability	parasthesia
deafness	malaria	polyneuritides
dysentery	muscle cramps	tinnitus
hernia		tuberculosis

During the 33 to 35 years since liberation, many of the former prisoners, who had suffered serious residuals, have died. Most of the surviving ex-prisoners have several permanent residuals, and have been rated by the Veteran's Administration from 0% to 100% disabled. Public Law 91-376 (Aug. 12, 1970) has made it possible for most former prisoners of six months or longer during World War II, to have received some degree of disability. Yet, former prisoners are continually being brought to my attention, because they have been unable to convince the Veteran's Administration that they have a "Service connected permanent disability," even after surviving the gamut: Bataan, the Death March, several years of incarceration from Cabanatuan and Bilibid to Formosa, Japan, Korea and Manchuria via

P.O.W. RESIDUALS COMPLICATED BY THE "GOOD LIFE"

Many prisoners, on returning home and discovering the "Good Life" vowed they would never again "Go Without." They over-ate, over-drunk, over-smoked and over-medicated. Just as detrimental, they under-exercised. Unfortunately, many returning prisoners craved the things they missed in prison camp, - diets rich in fat, cholesterol and salt besides cigarettes, and hard and soft drinks.

Unfortunately, many ex-prisoners have chain-smoked since World War II, complicating their P.O.W. residuals with such Tobacco Diseases ⁷⁻⁹ as:

amblyopia	Heart Attacks	Strokes
bronchitis	hypertension	Various cancers:
bronchiectasis	peptic ulcer	lips, tongue, bronchial
diabetes	thrombo-angiitis obliterans	esophageal, gastric, etc.

Unfortunately, some have become chronic alcoholics, further damaging their brain, heart, liver, stomach, nerves, etc., and a few have become addicted to drugs, damaging the brain, nerves and the genes.

The complications (residuals) of the "Good Life" have added further confusion relating to "Service Connection" of disabilities for physicians of the V.A..

CONCLUSIONS

It is my experienced and honest opinion that any former Japanese P.O.W. of six months or longer, who has been through the trials and tribulations of Oriental oppression, inhumane treatment during Death Marches, multiple prison camps and Hell Ships, as well as the tortures that only the Oriental mind can fathom, plus the stress of modern life in these United States, should be considered to have at least 50% "Service Connected" permanent disability, and most often, 100%.

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ADDENDUM

It is interesting to note the recent reactions of some of our current movie heroes, when asked to take parts in a forthcoming war movie being filmed in the Philippine Islands. Several turned down the parts unless they could be paid some \$1-2 Million per week. Another begged off: poor health. Can you imagine fighting a War with characters like these?

As the aging process bears more critically upon the great majority of American ex-prisoners of war, it is probable that a significant portion of them are beginning to be more and more aware of a handicapping hearing impairment--that is to say, a substantial impairment in the understanding of speech, especially in group conversation or in noisy environments. This is not surprising, because nearly all were trained for combat and were engaged in combat. They experienced a considerable amount of exposure to severe noise that could have been damaging to the delicate nerve endings in the inner ear. The fact that all are not experiencing this difficulty is attributed to the phenomenon that some ears are more susceptible to damage than others. However, regardless of susceptibility, it is expected that long exposure to high levels of noise will slowly but inevitably produce a hearing loss, hence the so-called "boilermaker's ear". Consequently, those exposed to long hours of duty in extremely noisy environments, such as flyers, tankers, marine engine attendants, etc., are likely to have suffered some degree of damage.

At the time of discharge, this damage in most cases went unnoticed or was disregarded, because it involved the hearing of the higher pitched sounds, those pitches, or frequencies, above the range of speech sounds. Such hearing would appear adequate. In those days the military services used spoken or whispered voice tests for determining adequacy of hearing for military duty. They were done under varying and often poor sound conditions so that impairments in the upper frequencies went undetected. Since fitness of duty was generally and still is dependent upon the ability to understand speech, such hearing was considered satisfactory.

It is normal for hearing to decline with aging. The upper frequencies are affected first. As this decline increases, it involves more of the middle frequencies and affects hearing for speech. If there has been damage as a result of trauma at an earlier age, it can be expected that there will be premature, socially handicapping deafness. A well known report from the 1954 Wisconsin State Fair Hearing Survey bears this out. It is illustrated in Figure 1, here presented, which was taken from that report. The differences in hearing by decades of age are exhibited. One notes that the 60-79 age groups are markedly different from the younger groups, and the higher frequencies are clearly more involved. The median hearing levels of the groups were used rather than averages. They yield a better representation and show that half the men hear better or worse than the levels indicate. One might say of the 60-70 age group that half of them had some difficulty hearing in social situations, the older group, more so, perhaps. This may not be a completely valid conclusion, because participation in the survey was voluntary, and a large number of those choosing to be tested may have suspected a hearing problem and were attracted to the test. Great effort was expended to avoid this bias, however. A hearing level of 30 decibels borders on social adequacy.

The percentage of combat veterans in this survey is quite small. They do not influence the data to a notable degree. Retrogressive hearing with aging is a general trend; therefore claims for compensation later in life are difficult to support. Unless service connection was established at or near discharge, a claim cannot be reasonably pursued under present V.A. regulations.

Another interesting finding of the survey is illustrated in Figure 2. It shows that half or more of men between the ages of 50-59 who worked in relatively quiet environments had significantly less impaired hearing than those who worked in noisier environments. The greater impairment is again seen to be in the higher frequencies, those above 2000 Hertz (cycles per second), the upper limits of the critical frequencies for speech. The regression into the speech range is marked for the factory workers.

It was found that those who fired a gun often or experienced highly noisy military service had poorer hearing than those not so exposed. Former Marines were found to have the greatest hearing loss. This was expected because all Marines have a large amount of weaponry in their basic training and function largely as infantry. Women, not surprisingly, showed much better hearing than men--they have much less exposure to noise.

The major implications for ex-prisoners of war from this presentation are that (1) they generally were exposed to a significant amount of extreme noise during their military service, (2) it must be assumed to have had a damaging effect upon hearing for a large number of them, (3) the damage usually involved the upper frequencies, above the speech range,

and was not detected at the time of discharge and was not documented, (4) this abuse and damage to the delicate hearing mechanism initiated a degenerative process in excess of normal retrogression attributed to aging so that many now suffer socially inadequate hearing at a premature age, and (5) this may be difficult to support in a claim on an individual basis under present V.A. regulations, but it should be assumed that it had its origin with military service and should be combined with other disabilities that are more or less recognized as having their subtle beginnings from the extremely adverse conditions of captivity.

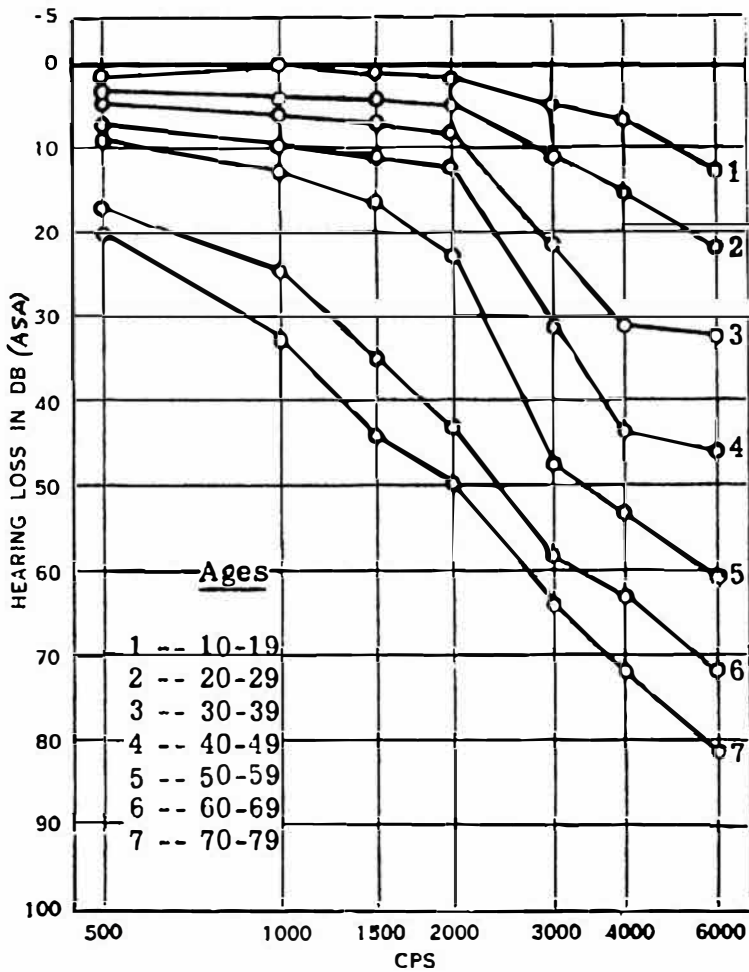


Figure 1. Median hearing losses of men in the total sample (left ear only).

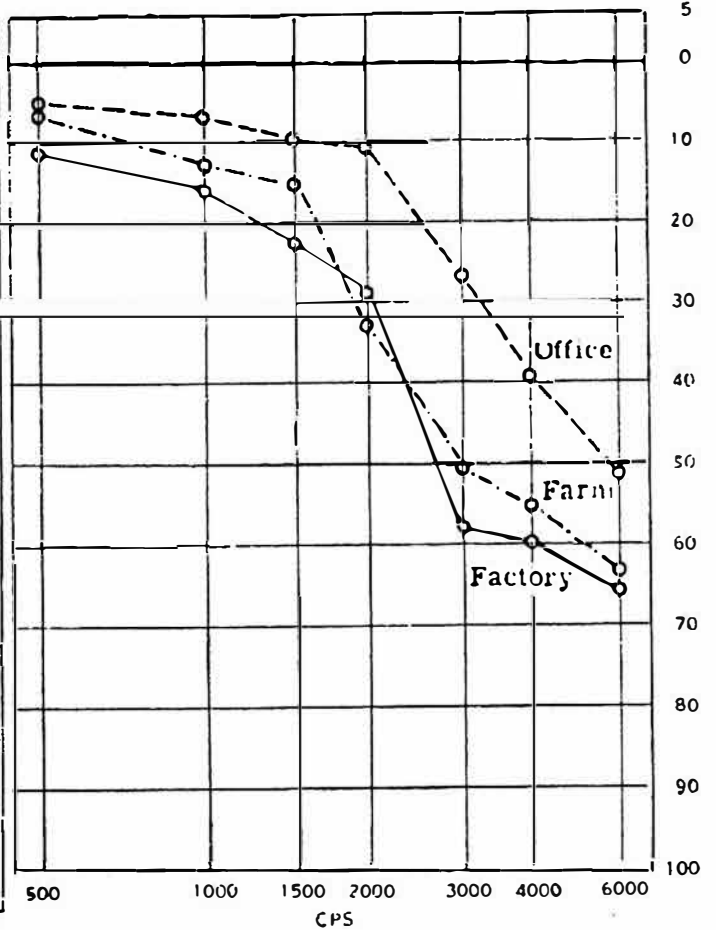


Figure 2. Median hearing losses of men 50-59 years of age working on farms (n:31), in offices (n:64) and in factories (n:86).

If any of you have problems in speech or hearing you may write Dr. Falconer at 7016 Staffordshire, Houston, TX 77030. Please respect his wish that you only write him concerning problems in these areas.

American Ex-Prisoners of War, Inc.
 Medical Research Committee
 1410 Adler Road
 Marshfield, WI 54449

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BERIBERI IN FORMER POWs OF THE JAPANESE

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Forty years later, survivors of World War II Japanese prisoner-of-war camps still may suffer the effects of malnutrition experienced during internment.

Beriberi was the most debilitating of all the nutritional deficiency diseases to affect American POWs of the Pacific theater. Beriberi, the Singhalese word for weakness, results from a deficiency of thiamine (vitamin B1). Thiamine is readily and rapidly absorbed through the upper intestinal tract and quickly dispersed to its chief storage sites: the muscles, heart, kidneys, and brain. Since thiamine is a water-soluble vitamin not stored by the body, it is needed on a daily basis. Even short periods of deprivation may lead to deficiency states.

Thiamine has two major functions. First, it serves in the transfer to aldehyde groups in the oxidative decarboxylation of pyruvate and alpha-ketoglutarate. Thiamine deficiency can lead to excessive pyruvate levels, which may impair neuronal function. Thiamine is also necessary for the formation of acetylcholine, a compound that affects the transmission of nerve impulses.

Thiamine is found in several foods, but only a few hold concentrated supplies of the vitamin. The best sources of thiamine are pork, organ meats, yeast, leafy green vegetables, whole grain cereals, berries, nuts, and legumes.

MALNUTRITION IN POWs

Polished rice gruel was the main dietary staple of the American POWs of the Pacific theater. White flour and polished rice contain almost no thiamine. The Japanese had great difficulties feeding their own South Pacific armies, and their code of Bushido--a feudal military Japanese principle of chivalry valuing honor above life--did not compel them to extend their resources to the American POWs. In addition the Japanese never anticipated the magnitude of the prisoner population for which they would be responsible.

In the months that followed the initial Japanese commencement of hostilities, 300,000 allied soldiers became prisoners. The majority of the 33,587 American soldiers imprisoned during the Pacific campaigns had been captured in the Philippines; 12,909 died in captivity.

Many of the American military personnel captured in the Philippines were already malnourished prior to their incarceration, because supply lines were cut off as a result of the attack on Pearl Harbor in December 1941. Half-rations were a mere 2,000 calories per day in February 1942. By March, these active soldiers were subsisting on 1,000 calories per day. Three weeks prior to their capture by the Japanese, the average weight loss was 50 pounds.(1) This statistic was confirmed by post-repatriation physical examinations performed by the congressionally established Morgan Board debarkation hospitals, which documented weight loss between 20 and 50 pounds on soldiers prior to capture.(2) The typical prison diet varied from day to day and differed among individual camps, but it usually consisted of polished rice and weeds. A half-full canteen cup of thin rice gruel twice a day was standard fare. On infrequent occasions, prisoners received three

half-cups a day. The rice contained many weeds to compensate for the lack of vegetables.(3) At some camps in the Philippines, veterinarians would slaughter a water buffalo once a week to feed 5,000 to 12,000 prisoners--each serving contained no more than a few grams of protein.(4) Because of these vitamin and protein deprivations, malnutrition disease states were inevitable.

TYPES OF BERIBERI

Beriberi usually affects many organ systems and is divided into three general types based on the most prominent clinical features. Cardiac beriberi presents chiefly with cardiac decompensation; dry beriberi has signs and symptoms chiefly localized to the neuro-muscular system; and wet beriberi presents with edema in addition to the neuromuscular complications. (5)

Several post-repatriation studies were performed to determine the extent of beriberi in prisoners returning from the Pacific. A total of 4,628 Pacific theater POWs (30% of all survivors) were examined by physicians at the Morgan Board debarkation hospitals. A history of wet beriberi was disclosed in 77% of the POWs and dry beriberi was disclosed in 50%.(2) A January 1945 report from one of the first American ships to arrive in the Philippines after their recapture revealed that 66% who had survived incarceration in the Philippines had beriberi.(6)

The Morgan Board felt that avitaminosis was the single most significant finding among the POWs examined. This finding was confirmed in a series of review articles stating that almost all of the Pacific POWs had suffered from severe malnutrition in multiple forms.(7)

Several American physicians were captured on Bataan. One of the most well-known, R.E.Hibbs, believed that nearly all his fellow prisoners suffered from some form of beriberi.(8) Similarly, J. Nardini, MD, observed that most of his fellow POWs were afflicted with the disease.(9) In my own patient population of Bataan survivors, 10 out of 12 (83%) have chronic neurological sequelae from beriberi.

Cardiac beriberi is caused by a severe thiamine deficiency lasting for a period of three months or longer. The three accepted stages of cardiac beriberi are mild, moderately severe, and acute perniciously fatal (known as Shoshin beriberi).(10)

Three primary physiologic alterations are noted in cardiac beriberi, the first being dilatation of the peripheral arterioles and capillaries with increased blood return to the venous side. If left untreated, high output cardiac failure may ensue. Secondly, volume overload to the right side of the heart also occurs, eventually leading to biventricular cardiac failure. Finally sodium retention occurs, resulting in edema. Metabolic acidosis is a prominent feature in Shoshin beriberi.(11)

The combination of high cardiac output and low systemic vascular resistance is the sine qua non of beriberi heart disease. Pathologic examination usually reveals a dilated and flabby heart. No endocardial or valvular lesions are discerned. Interstitial edema is the most common finding noted.

Hibbs found beriberi to be the most critical of all malnutrition-related disease suffered by American Pacific POWs as well as the direct cause for more disability and death during captivity than any other vitamin deficiency disease.(8) He identified three types of beriberi heart disease. The first, which accounts for 95% of all

diagnosed cases, is characterized by an irregular heart beat, acute attacks of dyspnea, and congestive heart failure. The second type is biventricular disease, a chronic condition that usually results in death. The third type, myocardial edema, is an acute condition that results in death shortly after onset.

EFFECTS OF BERIBERI

The nervous system is the most severely affected by beriberi. The basic pathologic change is axonal degeneration with destruction of both the axon and myelin sheath; in addition, variable amounts of segmental demyelination may occur.(12) These changes primarily affect the motor and sensory peripheral nerves, the spinal cord, and the brain stem. The distal segments of the longest and largest myelinated fibers in the crural and, to a lesser degree, the brachial nerves reveal the most striking changes.

Researchers at VAMC, Livermore, California, performed extensive electrodiagnostic testing on 32 former Japanese camp POWs with histories of beriberi neuritis. The results were compatible with distal polyneuropathy of the axonal-degeneration type in 28 cases (87.5%). The average motor distal latencies and nerve conduction velocities of study subjects were normal but the evoked potential amplitudes were significantly reduced. The EMG study revealed old degeneration in the distal muscle groups of the lower extremities bilaterally.(13).

In a survey of 898 former POWs conducted in 1982 and 1983, 49 (5.5%) had persisting symptomatic nutritional neuropathy dating back to their malnutrition in captivity.(14,15)

The clinical symptomatology of beriberi is as diverse as the disease process itself. The vast majority of the patients experience some degree of weakness, paresthesia, and pain. The symptoms are insidious in onset and progression. Initially, the symptoms are localized to the distal dermatomes of the limbs and progress proximally if untreated. Since the sciatic nerve is the most vulnerable to the destructive process, the legs are affected earlier and more severely than the arms.

Most beriberi neuropathy presents with a motor disability; however, in 25% of the cases pain and paresthesia are the main complaints. The paresthesia may manifest itself in several different forms, such as a dull constant ache in the feet or legs, tightness in the calves, cramping in the feet or calves, and coldness of the feet. A burning sensation in the soles or dorsum of the feet may also occur. As in gout, this sensation is intermittent, worsened by contact stimuli, and varies in severity. Some patients are unable to tolerate walking or even bedsheets touching their feet.(16)

Hibbs noted that in some camps, POWs would place their burning feet in ice water or snow, or expose their feet to the cold night to alleviate the pain. Other men would walk the floor at night out of sheer desperation in an attempt to alleviate the constant pain. Often, the mere vibration caused by someone passing within several feet would reproduce the pain.(8)

The motor system also reveals a wide spectrum of involvement. As with the peripheral nerves, the signs of beriberi are bilateral and worse in the distal legs. The thigh muscles are usually affected, as indicated by a patient's difficulty in rising from a squatting position. Also characteristic of the disease are foot and wrist drop. Absolute paralysis of the legs is rare; 2% of POWs in Japanese camps

developed motor paralysis.(8) The usual case of immobility is attributed to contractures at the knees and ankles.

A typical finding on physical examination is tenderness on palpation of the muscles of the feet and calves. Deep tendon reflexes are almost always lost in the limbs.

The peripheral sympathetic fibers are also affected, with excessive sweating of the soles, dorsal aspects of the feet, and volar surfaces of the hands. Since most cases involve only the limbs, the abdominal, thoracic, and bulbar musculature are usually spared. Dysphagia occurs in patients with severe neuropathy due to beriberi's effect on the vagus nerve. Involvement of the recurrent laryngeal nerves may result in vocal weakness and hoarseness.

CONCLUSION

The mainstays of therapy in acute beriberi are adequate diet and replenishment of B vitamins, particularly thiamine. Chronically, analgesics are effective for pain, and physical therapy may prevent contractures and bedsores. Because of their addicting nature, opiates should be avoided. Recovery is a slow process, possibly taking up to several weeks even in the mildest cases. In severe cases, the patient may not be able to walk unaided for several months. An unfortunate few may never recover.

Considering that more than 12,900 American POWs died during captivity in the Philippines and that not all repatriated prisoners underwent physical examination, and taking into account the eye-witness observations made by physicians imprisoned the camps, it can be concluded that the percentage of the total number of prisoners of war with beriberi was probably much higher than our statistics indicate. Physicians who are confronted with a case of neuropathy should consider beriberi neuropathy in the differential diagnosis, especially in patients with a history of beriberi.

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NEUROPATHIC BERIBERI AND CARBAMAZEPINE

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TO THE EDITOR: Chronic neuropathic beriberi is a painful and persist-
 ent form of nerve dysfunction affecting 1 in 30 persons with beriberi.
 In the United States, most cases are seen in immigrants from the Far
 East or in former U.S. prisoners of war held in Asia. Both groups
 subsisted on a diet consisting primarily of polished rice, which is
 practically devoid of thiamine. The characteristic pathologic change
 in neuropathic beriberi is axonal degeneration, with destruction of
 both the axon and the myelin sheath; in addition, variable amounts of
 segmental demyelination may occur (1).The distal fibers of the longest
 and largest myelinated fibers in the crural and, to a lesser degree,
 the brachial nerves show the most striking changes. The clinical
 symptomatology is a diverse as the disease process itself. Initially,
 the symptoms are localized to the distal dermatomes of the limbs and
 progress proximally if left untreated. Because the sciatic nerve is
 the most vulnerable to the destructive process, the legs are affected
 first. The most annoying sensation is the burning of the soles or
 dorsum of the feet. Neuropathic beriberi usually responds to thiamine
 replacement with complete resolution of the symptoms. However, in 3%
 of the cases, a residual painful neuropathy persists that is
 unresponsive to thiamine and conventional nonsteroidal anti-
 inflammatory drugs (2).

A 67-year-old white man had a burning sensation in the dorsum of
 his feet since his internment in a prisoner of war camp in the
 Philippines in World War II. The sensation was chronic, unrelieved by
 analgesics, and worse during sleep and when he was unoccupied
 physically. After repatriation, he had been unsuccessfully treated
 with large doses of thiamine. His previous medical history revealed a
 negative work-up for other causes of peripheral neuropathy. The
 patient was a well-developed, well-nourished white man in no apparent
 distress, with a blood pressure of 128/80 mm Hg. Other examinations
 showed no abnormalities. Neurologic examination was only remarkable
 for decreased sensation to pin prick and light touch bilaterally from

the mid-thigh distally. An electromyogram was within normal limits. Nerve conduction studies indicated sural nerve involvement, with mildly prolonged and decreased evoked potential amplitudes bilaterally. These results were consistent with previously described findings in patients with neuropathic beriberi (3).

Carbamazepine has been effective for years in treating several different types of neuropathy. Several authors have described its effectiveness in treating pains associated with trigeminal neuralgia, diabetic neuralgia, post-herpetic neuralgia, amyloid neuralgia, and uremic neuralgia (4,5). No author has ever described the use of carbamazepine in treating neuropathic beriberi.

The patient was given a trial dosage of carbamazepine, 200mg twice a day. The initial hemoglobin level was 14.2 g/dL, and hematocrit, 40%. After 4 weeks, the carbamazepine level was 5.8mg/dL; hemoglobin, 14.1 g/dL; and hematocrit, 40%. The patient denied any side effects. He reported a 50% to 75% subjective decrease in the severity of his symptoms. The carbamazepine dosage was then increased to 200mg three times a day. Six weeks later, the results of repeat hemoglobin and hematocrit measurements were unchanged, with a carbamazepine level of 7.0mg/dL. The patient reported that, since the increase in the dose, he had had only one episode of foot pain at night that required rubbing and no daily pain at rest.

The antidepressive effect of carbamazepine may have altered the patient's perception of pain, accounting for his improved clinical status. However, when all treatable causes of peripheral neuropathy have been excluded, and there is a history consistent with neuropathic beriberi, carbamazepine should be considered an alternative when no other agents have been successful.

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