

Original
M 2.556

IS NEURAL LEPROSY ETIOLOGICALLY UNIFORM?*

VITAMINE B₁ TREATMENT OF NEURAL LEPROSY

BY MED. DR. ERNST KEIL
*Former Medical Officer in charge of
the Surinam Leper Colonies
Cologne, Germany*

Doubts have been raised as to whether the neural form of leprosy is etiologically uniform. Observations recorded in the literature favor the view that the clinical picture of neural leprosy is not solely due to the effect of leprosy bacilli and their metabolic products on the nerve tissues, but that the symptoms of bacterial processes are subordinated to typical manifestations of vitamine B₁ deficiency.

Animal experiments in rat leprosy and recent clinical observations in lepers indicate that leprosy is often associated with hypo- or avitaminosis and that vitamin B, especially vitamin B₁, is closely connected with this infectious disease from the viewpoint of pathogenesis and therapeutics.

Comparison of the clinical symptoms of neural leprosy with those of a pure B₁ avitaminosis, beri-beri, showed a surprising number of similarities. A vitamin B₁ deficiency predominates etiologically in both diseases. In neural leprosy and in chronic beri-beri the clinical neurological picture suggests that the cause of the sensory, trophic and motor disturbances may well be found in a polyneuritis which develops after a long period of incubation, beginning peripherally and progressing slowly proximally.

Diet in the tropics has a high and dangerous excess of carbohydrates and is poor in animal albumen, fats and especially vitamins. The poverty of tropical diets in vitamin B (especially vitamin B₁) has been stressed on various occasions. Neural forms of leprosy occur primarily in those countries where the population lives mainly on a carbohydrate diet, i.e., in Japan, China and the majority of other tropical and subtropical countries. In the northern, colder countries, on the other hand, the nodular forms generally predominate.

*A condensed translation, submitted by the author, of an article that appeared in *Archiv für Schiffs- und Tropen-Hygiene* 42 (1938) 1-13.)

In contradistinction to carbohydrates, fats have an economizing effect with regard to vitamin B₁. This property is common to all fatty substances and probably explains the therapeutic value of vegetable oils and fats employed in the treatment of leprosy. It has been suggested that the action of chaulmoogra oil and its derivatives on leprosy is not specific but purely nutritive. Not all lepers subsisting on roughly the same vitamin B₁-poor diet suffer from neural leprosy but only a certain percentage of them, varying according to the region they live in. It may therefore be assumed that disturbances of absorption occur, especially in the neural forms of leprosy, and that these are intensified by vitamin B₁-poor diet. The observation that in cases of neural leprosy the prodromal symptoms in the form of intermittent, neuralgic pains, sensory disturbances, gastro-intestinal disorders etc., are generally more pronounced than in nodular leprosy appears to indicate that vitamin B₁ plays an especially important part in the former. Rodgers and Muir have emphasized the importance of gastro-intestinal disturbances in the development of leprosy processes. Muir also attributes the wide endemic distribution of leprosy in most tropical countries to dietetic causes. A therapeutic trial in leprosy with vitamin B₁ is primarily justified when clinical symptoms appear which can be recognized as resembling those of deficiency of that element. In leprosy, use of vitamin B₁ comes mainly into consideration in all peripheral, acute or chronic leprosy nerve affections, especially those of a neuritic or neuralgic nature, but also in leprosy disorders of the sensory nerves and as hyper—, hypo—and paraesthesia; it may also be given a trial in those cases of anesthesia which are still amenable to treatment. Early symptoms of leprosy, which are almost exclusively of a neural nature, and macular leprosy, respond particularly well to the vitamin.

The question how far vitamin B₁ therapy can influence leprosy as a general affection also requires elucidation. Such treatment may quite possibly have a favorable effect, as it affects all metabolic processes and energetically stimulates the whole digestive system, considerably improving the intake and absorption of food.

In the nervous manifestations of leprosy it is generally advisable to inject 5-10 mg. of vitamin B₁ subcutaneously or intramuscularly, daily or every second day. The duration of treatment depends on the severity of the condition and on the response to the treatment. Definite improvement is generally seen in the course

of two or three weeks, in resistant cases at the latest after four weeks.

Parenteral treatment should be combined with diet as rich as possible in the vitamin. After finishing the course of injections, the diet should be as rich in this and other vitamins as possible for reasons of prophylaxis.

In addition to ensuring the body a plentiful supply of vitamin B₁, consideration should be given to replacing vitamin D which acts as catalyser in the synthesis of the calcium-phosphorus complex required for bone formation; this applies especially to the neural forms of leprosy. In the same way as in neural leprosy and beri-beri, where the nerves situated furthest from the nutritive center are affected earliest, the peripheral bones of the hands and feet are also affected first.

The recently accomplished synthesis of vitamin B₁ makes it possible to administer highly concentrated preparations of it. Standardized preparations are "Betaxin" and "Betaxin forte." The Betaxin ampules of 1 cc. contain 1 and 2 mg., and that of Betaxin forte of 1 cc. contains 10 mg., of the synthesized crystalline substance.

A trial of the suggested line of treatment would seem to offer good prospects of success in nerve leprosy and will assist in answering the question whether or not neural leprosy is etiologically uniform. The object of this paper is to stimulate research in leper colonies abroad, as the author has no opportunity of making suitable experiments in his own country.