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## International Journal of Leprosy, Vol. 15, No. 1. Jan.-March 1947.

Chemotherapy of Leprosy, by G. H. Faget. This article describes with clarity and conciseness the technique and administration, the therapeutic and bacteriological effects and the results of treatment by promin, promizole and diasone. The author claims that the results he describes merit the claim that sulphones have a progressive and specific action in leprosy. The article in general has perhaps a tendency to understress the difficulties, dangers and limitations of sulphone therapy but it can be recommended as an excellent short summary of the present chemotherapeutic position.

Injury of Nerve Elements of the Tongue Root in Lepromatous Leprosy, by N. E. Ermakova. This is a more or less preparatory article containing a careful and well illustrated study of leprotic invasion of the tongue. The author traces the spread of bacilli in the gustatory goblets and along the perineural sheaths suggesting that the flow of lymph in the nerve sheath is the medium whereby infection is extended.

A Study of the Bacilli Tissue Cultures of Lepromata in Serum Media, by John H. Hanks. The author summarises as follows:—

\*\* 1. Tissue cultures from four lepromata were grown and maintained in a viable condition in serum media for period of from 14 to 34 days.2. The infected macrophages died early in the history of the cultures

 The infected macrophages died early in the history of the cultures and deposited their bacilli within the necrotic mass of the original explants.
The only cells that persisted throughout the life of the cultures

were fibroblasts, which ordinarily contained no bacilli or only a few. 4. Quantitative rating of the explants with respect to their bacterial

content did not reveal an increase in the total mass of bacilli. 5. The development of turbidity in the plasma of older cultures was

found not to be attributable to multiplication of bacilli in this site as claimed by earlier workers."

The Fate of Leprosy Bacilli in Fibroblasts cultivataed from Macular and Tuberculoid Lesions, by John H. Hanks. The author summarises as follows:—

" 1. Cultivation and maintenance of the fibroblasts from macular or tuberculoid lesions for periods of two to seven months did not provide for multiplication of leprosy bacilli within these cells.

2. The total numbers of intracellular bacilli, or the proportion of cells with bacilli, sometimes increased during intervals as long as three months, but this rise was always followed by a decline in bacilli and by signs of their disintegration.

3. Evidence is presented that the concentration of bacilli in the outgrowing cells was influenced by early and transient or delayed or discontinuous transportation of micro-organisms from the primary explants of the lesions, and also by the degree to which the bacilli were divided among the growing cells.

4. Pigment granules, as well as bacilli, occurred in the fibroblasts from the papillary layer of skin. Their incidence was controlled by the factors which determine the occurrence of bacilli, and they were usually

to be found in the cells which contained bacilli for the longest intervals. These inert particles served to identify such cells as containing material from the original explants.

5. The fibroblasts from these clinically more resistant forms of leprosy were found capable of rapidly destroying the micro-organisms. This capacity in accordance with the numbers of bacilli phagocyted and with the physiological activity of the cells."

The Fate of Leprosy Bacilli in Fibroblasts cultivated from Lepromatous Lesions, by John H. Hanks. The author summarises as follows:—

"I. Fibroblasts from human lepromata were maintained *in vitro* for intervals of 7 to r.4 weeks. Irrespective of whether the new growth was left attached to the original explants or was subcultured in successive series of tubes, the proportion of cells containing bacilli (and the content per cell) decreased continuously.

2. By the use of carbon from India ink as inert control particles, all the quantative relationships between the bacilli and the cells were duplicated, except that the bacilli disappeared more rapidly than the carbon.

3. The bacterial and carbon content of young cultures were found to depend on the concentration of particles and cells in the explants and on the luxuriance of early outgrowth, while the concentrations of particles in older cultures of comparable early histories was related inversely to the degree of cell growth.

4. A temperature of 34 degrees C:, slow growth, low cell metabolism, and a slightly alkaline medium permitted maintaining bacilli in the cells in apparently good condition for long intervals, but did not prevent an eventual inversion of the bacillus-carbon ratios. More active cell metabolism, or a lower ph, accelerated the disappearance of the bacilli. Analogous differences in physological conditions differentiate the group of peripheral tissues in which leprous lesions are common from the internal organs in which the bacilli are rare or of abnormal appearance."

There are two further short articles by the same author on the influence of carbon particles in rat leprosy and the meaning of plasma turbidity in the plasma of tissue cultivation.

The same author also contributes Attempts to infect Chick Embryos and Chick Tissue Cultures with Bacilli from Human Lepromatous Lesions. He summarises as follows:—

"Bacilli from leprous nodules were used to infect developing chick embryos, tissue cultures from chick embryos, and newly hatched chicks.

There was no evidence that the micro-organisms grew during the brief interval between the injection of bacilli into chick embryos and the hatching of chicks.

When the bacilli were injected into chick tissues prior to the preparation of explants for cultivation, the bacilli occurred almost exclusively in the macrophages during the existence of these cells and only later in the more persistent fibroblasts. The bacilli appeared to be no more toxic than carbon particles. Either kind of particles stimulated the cells enough to hasten the digestion of the plasma and to reduce measurably their longevity during continuous growth in non-renewed media. The bacilli within cells disintegrated more rapidly than those outside."

Nothing could have been more timely or apposite than the Editorial of this number of the International Journal of Leprosy. It calls in no uncertain terms for a planned and co-ordinated scientific study of the sulphones. The warning comes none too soon for already there is a marked absence of the use of controls

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with adequate doses of hydnocarpus oil in the recorded description of sulphone therapy.

The number also contains a full report on the Second Pan-American Leprosy Conference held at Rio de Janeiro, 19th-27th October, 1946. The reports of the Sub-committees on Classification, Epidemiology and Treatment are given in detail.

A short article, *High Lights of Wartime Culion*, by Dr. Wade, gives something of the story of the world's largest leper settlement under Japanese occupation. There is much to be read between the lines and the story is told with a terse and grim objectivity that makes compelling reading.

### Leprosy in India, Vol. XIX. No. 1. January 1947.

The Editorial of this number is a very carefully considered survey of the present position with regard to the classification of leprosy. In particular there is criticism of the proposed uncharacteristic grouping representing "a collection of heterogenous types differing in clinical immunological and histological findings and in prognosis."

The Lepromin Reaction in Subsided Lepromatous Cases, by Dharmendra and N. Mukherji. This is a study of the lepromin reaction in seventeen lepromatous cases which became clinically arrested and bacteriologically negative. The study is a detailed one and should be read in full. The authors conclude that improvement in lepromtous cases is seldom accompanied by a change to a positive lepromin reaction although a slight sub-positive increase in reaction is often observed. Where there is a tendency to relapse the sub-positive response is seldom found.

Legislation in Leprosy in India, by J. J. Joseph. This article is a plea for modern leprosy legislation on an all-India basis. There is a preliminary discussion on why leprosy disappeared from the British Isles which contains two ingenious and new theories. One is that the lazar houses were plundered and destroyed by ravaging soldiers in internal wars. The other is that during Britain's period of colonisation in the 17th and 18th centuries the lepers emigrated. These theories have the merity of naïvety but the author demands our respect in his call for new and enlightened legislation for India.

Dr. Dharmendra and Dr. S. S. Jaikaria contribute a short but important article *Failure to Sensitize Presumably Non-leprous Individuals to Lepromin.* The authors describe an experiment whereby they find that lepromin test readings in non-leprous persons are not affected by the repetition of the test.

Promizole Treatment of Leprosy. A Preliminary Report, by G. H. Faget, R. C. Pogge and F. A. Johnson is a reprinted article of a detailed study of seven cases which have received Promizole treatment for at least a year in doses up to 6 gm. daily. The authors feel that results may be more rapidly obtained with Promizole than with either Promin or Diasone.

The attention of readers is drawn to the article on Leprosy by Dr. Lowe in *Principles and Practice of Tropical Medicine* by L. E. Napier. The article on leprosy in the text book covers some forty pages and is the most succinct and able resume of its size that we have yet encountered. It is to be recommended to all who, unable to study the larger text books or detailed literature of the disease, wish for a compact and authoritative study of leprosy.

Stein, A. A., and Dorofejew, W. N. Zur Frage de Klinik und pathologischen Anatomie leproser Iritis. Int. J. Leprosy, 1945, 13, 43-66. (Dec.).

The character and certain peculiarities of ocular leprosy affecting the uveal tract are discussed by Stein and Dorofejew. The total number of cases examined was 298, of which 264 were of the lepromatous or mixed form and 34 of the neural form. In the lepromatous group there were 92 cases of chronic iritis and iridocyclitis. In 145 patients there were various symptoms of involvement of the iris. In the neural group there were 5 cases of iritis.

The three most important forms of leprous uveitis are those with miliary lepromata, those with a solitary leproma, and diffuse parenchymatous iritis.

In the pathological investigation of 27 fragments of iris, the authors found that 8 specimens showed seroplastic iritis, 16 specimens showed seroplastic iritis with miliary lepromata and in 3 specimens there were no specific changes.

In the seroplastic group the structure of the iris is fairly seriously affected. The stroma is very dense and in most cases the iris is very thickened. The sphincter and dilator muscles cannot be recognised. There is considerable lymphocytic infiltration, but few blood vessels compared with normal irides are found. The layer of pigmented epithelium is undamaged and is absent in only a few spots on the iris. On the anterior surface of the iris there are many branched cells containing many granules of brown pigment. Leprosy bacilli in rounded clumps are present in large numbers, but most of the bacilli are in an abnormal state and do not stain evenly. There are many red acid-fast granules. In this group there are merely signs of chronic inflammation, without formation of the typical leprous granuloma. The process is accompanied by proliferation of the stroma, abnormality in the distribution of the pigment, disappearance of the muscle bundles, and the presence of a rather large number of leprosy bacilli. Virchow's lepra cells are not seen.

In the seroplastic iritis with clinically observed miliary lepromata group the structure is different. The iris is still more severely affected, the thickening more pronounced and there are local prominent swellings. The stroma is denser than usual, is poor in blood vessels, is infiltrated by a considerable number of lymphocytes, and the sphincter and dilator muscles are unrecognisable. The pigmentary layer is damaged, being absent in some places and very thin in others. In the anterior part of the iris there are fairly numerous cells with granules of brown pigment and in places accumulation of large cells with a rather pale, large, oval nucleus, Numerous yellow accumulations of granular i.e., histiocytes. lipoids are revealed after staining with Sudan III and in some cases the lipoids show vacuoles bounded by a rim of brownish colour. The walls of the few blood vessels are much thickened and the lumen may be narrowed or occluded. Staining for lepra bacilli reveals a colossal number of these. They appear scattered through the iris or in globular groups containing histiocytes. Most of the bacilli are abnormal; they take stain badly, there are shortened forms and granules. Very often the staining is so faint that one can only speak of bacillary shadows. In this group, beside the changes observed in plastic iritis, there are the histiological findings typical of lepromatous leprosy, which are very small, circumscribed granulomata of specific structure with lepra cells containing lipoids, vacuoles and large numbers of leprosy bacilli.

In the third group of three specimens, in which clinical and histological examination did not show any inflammation, there was one case in which lepra bacilli were found. All three cases belonged to the neural type of leprosy.

The pathological findings agree with the clinical findings. If the corneal microscope revealed miliary lepromata, they were also seen on histological examination, and when plastic iritis was diagnosed, histological examination showed only non-specific chronic inflammation together with leprosy bacilli. Both forms are undoubtedly part of the leprous process. Plastic iritis alone was was found to occur in patients with leprosy of long duration, in which the process is becoming extinct, with extensive atrophy and

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cutaneous scars, or in patients with a mild form of the disease, with few lepromata and infiltration.

On the other hand, progressive leprosy with numerous cutaneous lesions is associated with iritis and miliary lepromata. The reaction of the iris is thus a guide to the state of immunity of the patient. E. O'G. KIRWAN.

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