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50X1-HUM

CLINICAL ASPECTS OF TULAREMIA CASES
COMPLICATED BY AFFLICTION OF THE NERVOUS SYSTEM

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Tularemia is a disease not only of the lymphatic system and skin, but of the whole body, involving pathological processes of the nervous system. Little attention was paid to the condition of the nervous system in tularemia cases until recently and the effect of the causative agent of tularemia and its toxins on the nervous system remained unknown. At present, there are three papers published in Russian periodicals on work done by Nervushin, Finogenov, and Mirotvorskiy which deal with the problem of neurotularemia.

This report is based on the observation of 21 cases of neurotularemia. All of the patients had had one of the forms of tularemia in the past, which was confirmed by their anamnesis, positive agglutination reaction, and results of intracutaneous allergy tests with tularin.

The clinical picture of neurotularemia can be divided into two periods: the early and the late. The early period originates at the onset of the disease and is characterized by the initial reaction of the central nervous system to intoxication. In this period, as Pervushin and Finogenov have pointed out, headaches, disturbances of sleep (somnia or more rarely, insomnia), muscular pains, profuse perspiration of the legs, and sometimes derangement of consciousness to the point of hallucinations are observed at high temperatures. When the temperature falls, general asthenia is sharply expressed and becomes the patient's main complaint. Asthenia and the oppressed psychic condition are accompanied by pains, chills, and paresthesia (numbness of the arms and the sensation of ants crawling. Tremor of the hands and eyelids, quick tendinous reflexes, and increased muscular excitability were noted during objective examinations.

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In the late period, symptoms of the affection of the central nervous system were found. In three cases a polyradicular syndrome was noted consisting of the symptom of radicular pains, occasional peripheral paresis, and reduction of radicle sensitivity.

We cite a case history as an illustration.

Patient Ch, 42 years old, reported on 5 June 1947 complaining of a severe pain in the small of the back which spread over the posterior surface of the leg. In February 1947 he had been ill with the bubonic form of tularemia. After 5 months, a minor constant pain appeared in the small of the back, which was aggravated after chilling. The pain spread over the posterior surface of the right thigh. Then the pain became very severe and spread to the left thigh. The patient was unable to walk.

The patient was tearful and sensitive. There was fascicular twitching in the muscles of the buttocks and in the posterior surface of the thighs. Active movement of the legs was limited due to pain, and the muscular tonus was diminished. The knee and achilles tendon reflexes were absent. There was derangement of pain and tactile sensitivity, hypesthesia from the II lumbar vertebra to the I sacral vertebra, and anesthesia from the I to the V sacral vertebra. Complete sensitivity of the toes of the left foot was absent. Lasegue's symptom and Neri's symptom were strongly positive. There was atrophy in the muscles of the left thigh. No changes in the spine were found by X-ray examination. The cerebrospinal fluid was normal. The intracutaneous test with tularin and the agglutination reaction for tularemia were positive.

Diffuse affections of the nervous system were observed in four patients. In one case the affection of the medulla oblongata was dominant, in another that of the cerebrum. In a third case the symptoms of the affection of the medulla oblongata and the cerebrum with pseudobulbar and vegetative effects predominated, and in the fourth case affections of the radicles and plexi were observed. In all these patients the course of the disease was chronic and progressive with periodic exacerbation.

We cite an example. Patient S, 40 years old, reported on 17 April 1947 with a pain in the lower jaw joint and in the small of the back, general asthenia, a tendency to perspire, and periodic increase in temperature to 37.5 degrees. In December 1945 he had had the typhoid form of tularemia.

The right eye opened wider than the left. The mouth opened 3 centimeters, and in showing the teeth, the right edge of the mouth drooped. The tongue could be stuck out only as far as the front teeth. Hypesthesia on both sides of the V to VIII cervical vertebra was found in determination of the pain sensitivity. There was moderate atrophy of the muscles of the right shoulder girdle, and slight hypotonia of the lower extremities. The knee reflex was greatly reduced, more on the right side than the left. The moisture of the skin was increased and there was a red outspread dermatographism. The hand and fingers tremored when the arm was extended. Romberg's sign was positive. The paravertebral points were painful. Lasegue's symptom was positive on the left side. The intracutaneous test and the agglutination reaction for tularemia were positive.

An encephalitic syndrome was observed in seven cases. Two cases with the symptoms of Parkinsonism which had developed in direct connection with tularemia were worthy of special interest. We found no similar cases in medical literature.

- 2 -

SECRET

SECRET

SECRET

SECRET



50X1-HUM

In the remaining seven cases, symptoms of the affection of the diencephalon were found. Organic changes in the region of the diencephalon account for emotional instability and symptoms of hysteria noted in these patients.

It should be noted that in all neurotularemia cases, we found emotional instability expressed in varying degrees, which indicated the presence of subcortical and connective complications. In some patients we found, on the basis of highly delineated syndromes, unusual paroxysms similar to those described by Professors Itsenko and Penfield under the name "diencephalic epilepsy."

Conclusions

1. The study of neurotularemia was started some time ago. Our data is of a preliminary nature.
2. We studied 21 patients with neurotularemia. We confirmed that the patients have had tularemia by anamnestic data, positive agglutination reactions, and intracutaneous allergy tests with tularin.
3. We observed polyradicular, encephalitic, and subcortical-diencephalic symptoms, and the syndrome of diffuse affections of the nervous system in cases of neurotularemia.
4. In all neurotularemia cases there were diencephalitic symptoms expressed in varying degrees.

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- 3 -

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