

# TULAREMIA TREATED WITH ARTIFICIAL FEVER THERAPY

*Report of a Case*

W. J. ZEITER, M. D.

When tularemia was first discovered, it appeared as though the occurrence of the infection was limited entirely to the Western part of the United States, but today it is found throughout the country. The causative organism is the bacterium *tularensis* and the infection is non-contagious. It may be transmitted by any number of insects, but the usual source is the ordinary cottontail rabbit. An increased number of patients with this disease is seen during the hunting season because the infection is obtained from handling or skinning infected animals. This also explains the common site of the primary ulcer which is located most frequently on the fingers or the hand.

Netherton<sup>1</sup> described the primary lesion. The ulcer is granulomatous and the base shows a rich cellular infiltration with mononuclear cells predominating and a giant cell is noted occasionally. Marked hyperplasia of the endothelium of the capillaries is produced and in some areas the lumen is almost obliterated. Perivascular lymphatic infiltration at the margin of the lesion is especially noticeable.

The incubation period ranges from one to six days. The onset is usually sudden and is characterized by chills, headache, muscular pains throughout the entire body, especially in the muscles of the thighs and back, vomiting, prostration, and elevation of the temperature. The temperature usually ranges between 101° and 104° F. and continues to be high with some remission during the morning.

Tularemia is usually classified into four distinct clinical types: (1) ulceroglandular, (2) oculoglandular, (3) glandular, and (4) typhoid.

The ulceroglandular type is the most common. Francis<sup>2</sup> observed in 700 cases 80 per cent were in this group. Usually, about two days after a chill the patient notes an enlargement of the lymph nodes which drains the region of the site of the primary infection. The glands enlarge rapidly, usually out of proportion as is seen in other infections. They are distinctly painful and are connected by reddish-purple lines, indicating the presence of infection along the lymph channels. If the ulcer is on the hand, enlargement of the epitrochlear and axillary glands is noted, being marked in the former.

In the oculoglandular type, the infection is obtained by rubbing the eyes with infected fingers. This results in severe conjunctivitis and involvement of the pre-auricular parotids and submaxillary glands. The clinical picture will be described in more detail in the case to be reported.

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In the glandular type, an adenopathy of the superficial lymph glands occurs but a primary lesion does not appear to be present.

In the typhoid type, the outstanding symptom is fever and enlargement of the spleen. No primary ulcer can be demonstrated and adenopathy is absent. The onset is the same as in the above types.

A positive diagnosis is made by obtaining an agglutination of bacterium tularensis from blood serum collected in the second week of the illness and noting an increase in the agglutination titer in serum collected in the third week, or by isolation of the organism from the primary lesion, enlarged glands, or blood of the patient. The history is important and a diagnosis frequently can be made before the agglutination test is positive. The patient often gives a history of having dressed a wild rabbit or being bitten by a tick or fly. They usually have a primary lesion of the skin or conjunctivitis, persistent glandular enlargement in the region draining the primary lesion, and fever of several weeks' duration.

Foshay reported excellent results with specific serum<sup>3</sup>. Before this time treatment had been symptomatic. By the use of serum, he definitely reduced the convalescence, and improvement occurred within 24 to 48 hours after the injection was made.

The following case represents the oculoglandular type of tularemia. Serum therapy and local therapy also had been administered to the eye but there had been very little improvement.

### CASE REPORT

The patient, a white housewife 53 years of age, had enjoyed good health until December 21, 1937, when stiffness in the muscles of the cervical region and nausea of a short duration was noticed. Three days previously she had cleaned a rabbit for Sunday dinner. The rabbit had been purchased at the market and was skinned. Five days after cleaning the rabbit the left eye became inflamed and pustular lesions appeared on the palmar surface of the middle finger and on the thumb of the right hand.

On December 28, 1937, the patient was seen in the Department of Ophthalmology by Dr. A. D. Ruedemann. Examination of the left eye showed conjunctival chemosis and swelling of the lids, which was more marked in the upper lid. There was moderate mucopurulent discharge. The palpebral conjunctiva of both lids was studded with yellowish spots. There also appeared to be some sloughing on the upper lid. The temperature was 101° F. Muscular soreness was marked.

From the history and clinical findings, tularemia was suspected. Smears and cultures from the left eye on December 28th showed nonhemolytic streptococcus and staphylococcus albus. Tularemia agglutination was negative. Agglutination was positive (1:80) six days later and was 1:10,240 on both January 10th and January 24th. Other laboratory findings were within normal limits with the exception of the sedimentation rate and Kahn test. The normal sedimentation rate by the Rourke and Ernestene<sup>4</sup> method is up to 0.45 mm. per minute

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and this reading was 1.58 mm. per minute. The Kahn test was 2 plus on December 30, 1937, and negative on January 4, 1938.

Three injections of Foshay's tularemia serum were administered on January 10, 11, and 15, 1938. Generalized hives from the serum therapy developed on January 24th and lasted nearly two weeks. On February 18th, enlargement of the pre-auricular and submaxillary glands was noted. They became fluctuant ten days later and were incised and drained on March 7, 1938.

Very little improvement in the general condition and the condition of the eye was noted. On March 2, 1938, it was decided to give artificial fever therapy because some good results had been obtained by this method in the treatment of undulant fever. Artificial fever therapy was administered on March 4, 9, and 16, 1938. Each treatment was for five hours, the first up to 104° F. and the second and third to 105° F.

After the first artificial fever treatment the patient noticed marked improvement in the eye and it became progressively better following the successive fever treatments.

The patient has been seen at intervals and the eye is entirely quiet. When last seen on August 15, 1939, she was in good health and has had no recurrence. The tularemia agglutination at this time was positive (1:640).

Since just one case has been treated by this method, no deductions or conclusions can be made. It is reported merely because a good result was obtained and in the hope that it will stimulate other investigators to use this treatment when other therapeutic means have failed. Only after a large number of patients with tularemia have been treated by this method can its use be warranted.

### REFERENCES

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