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Ixodid Ticks: Possible Vectors of Tuberculosis

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Kerrest (1960) reported isolation of a human type of tuberculosis in a culture of Argas persicus ticks collected in nature in Mauritania. This author considers that these ticks may have a definite role in transmitting tuberculosis. During the coordinated expedition in 1964 to study tuberculosis epidemiology in the area between the Volga and Ural rivers (Mentyube and Zhambay animal husbandry pastures, Berlik-Bengiz region, Gur'ev Oblast), we examined for tuberculosis mycobacteria infection 300 Hyalomma asiaticum ticks, collected from camels reacting positively to tuberculosis.

Engorged and semiengorged ticks were placed in a vial and examined in the laboratory on day 17-20 following collection from infected camels. Suspension prepared from 15-50 ticks was grown on dense egg media and part of it inoculated into guinea pigs. In 1 case, a virulent culture of tuberculosis mycobacteria was isolated from a H. asiaticum suspension passaged in guinea pigs.

A series of experiments were run on 2 tick species, Dermacentor pictus and Argas persicus, to determine the possibility of infection and preservation of tuberculosis mycobacteria. These ticks were artificially and naturally infected considering their biological adaptation to different animal species and feeding properties. Experiments were made with 52 guinea pigs, rabbits, and chickens. A total of 493 ticks was used in the test.

From these tests, we established that artificially and naturally fed ticks are susceptible to the infective source and preserve tuberculosis mycobacteria in the body for a long period. D. pictus investigated on 7, 22, and 30 (observation period) following feeding on an infected rabbit had preserved the tuberculosis agent during these periods. A. persicus examined at different periods following infection with the human and bird type tuberculosis preserved the human type tuberculosis agent for 27, 35, 45, 57, and 91 days (observation period). Tuberculosis mycobacteria surviving in ticks for long periods did not lose their virulency or change morphological or cultural properties.

Preliminary data allowed to suggest the participation of these ixodid and argasid ticks in tuberculosis circulation. However, special investigators are indispensable for evaluating their epidemiological and epizootiological importance.

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