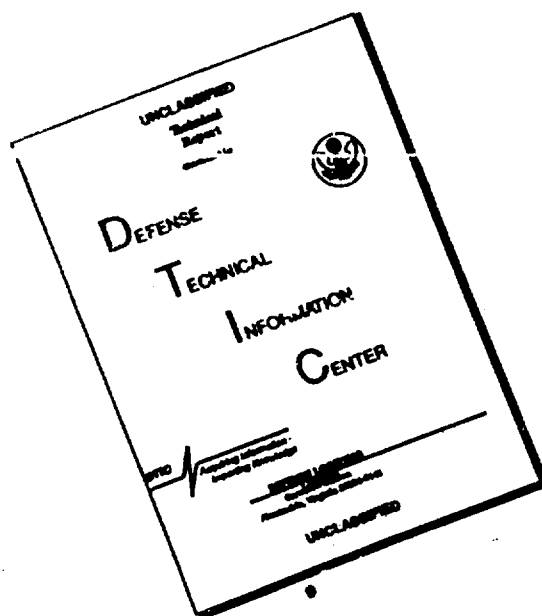


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From I. N. Maisky's article on "The Types of Epidemic Outbreaks of Tularemia" in Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii No. 7 - 8, pp. 32 - 38, 1945

A distinctive peculiarity of the agricultural outbreaks is the fact that they are preceded by the mass appearance of mousetype rodents with the development of an epizootic of tularemia among them. Illnesses among people usually begin in October, November, and sometimes later, depending on the beginning of the threshing of unthreshed ricks left for the winter. They continue until June-July, and sometimes until autumn (August-September) of the following year and cease only when the threshing and cultivation of the grain crops is completed. The occurrence of this type of outbreak depends on (1) the concentration of rodents - mainly the grey field mouse - in the ricks and stacks, in the grain and food warehouses, and to a certain extent in dwellings; (2) the infection of persons who participate in the threshing; (3) the cultivation (winnowing and sifting) of grain; and in the transportation and respreading of hay and straw.

The primary route of infection is respiratory (the dust route). The generalized clinical picture (typhoid and pulmonary forms of tularemia) is characteristic of this kind of outbreak. However, a significant number of the bubonic forms occur, apparently depending on the presence of contact infections. The transfer of the source of infection by dirty hands to the mucosa of the eye produces conditions favoring the occurrence of the ocular form. Contact by the bare hands with sick mice and the bodies of mice which have died of tularemia makes possible the occurrence of buboes in connection with the lymphatic system of the upper extremities (ulnar and axillary).

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The basic method of prevention in such outbreaks is the use of protective measures for those taking part in threshing and cultivation of agricultural products.

Outbreaks of this type are characteristic chiefly for their average period, which apparently depends on the ecological peculiarities of the common field mouse (*Microtus arvalis* Pall.) which, in the given territory, plays a large role (Mekipelov), as the experimental study of tularemia shows. This is equally true with infections dependent upon a man's participation in the cultivation of agricultural products. Infections in this type of outbreak take place through water (rodents with tularemia and their dead bodies get into wells). Use of food products infected by rodents suffering from tularemia also causes infections by the alimentary route, but the number of diseases due to participation in the cultivation of agricultural products predominates over all others.

Outbreaks of this type are connected with the inhabitation of mouse-type rodents chiefly in the ricks and stacks; they have their own specific epidemiological peculiarities (infection of people connected with threshing and the cultivation of agricultural products; the participation of a special type of rodent-grey field-mouse and others). It is natural that they require special prophylactic and control measures (the protection of people working at threshing; control of rodents in ricks; and the protection of ricks from being inhabited by rodents, etc.). Therefore, the division of such types of outbreaks into special types of mouse-produced outbreaks should be considered expedient.

"House" outbreaks of tularemia of mouse origin, as well as the agricultural type, occur on a background of the mass appearance of small mouse-type rodents with the consequent development of a tularemia epizootic among them.

The predominant species is the house mouse (*Mus musculus* Linn.) and to a lesser degree the grey field mouse (*Microtus arvalis* Pall.). Characteristic of this phenomenon is the fact that equally with the settling of rodents in the unthreshed hay and grain ricks, mice (chiefly the house mouse - *Mus musculus*) and partly other mouse-type rodents settle in great numbers in the dwellings, grain ricks and other agricultural structures. Their density is so great that in a number of cases from 100 to 300 mice have been caught in one trap in a single night (Khatenver, Maisky, Ioffe and Litvinov).

Tularemia infections in such outbreaks have no focal character and are not only connected with persons participating in the threshing or in the cultivation of agricultural products, but also with general illnesses in isolated populated places. In this connection the tularemia morbidity rate in such outbreaks bears a mass character.

The routes of infection have the most varied character. The respiratory route of infection i.e. by dust, has great significance. Tularemia infection by the dust route is observed not only in the threshing of ricks inhabited by rodents and in the cultivation of agricultural products, but also in the presence of an extremely dense concentration of the source of infection. The dust route of infection is possible in the sifting of flour infected by the excreta of rodents, under domestic and other conditions; by the dry sweeping of dwellings, warehouses et al. which are usually abundantly populated by rodents (Khatenver).

Outbreaks of this type are most frequently observed in the southern oblasts, but the possibility of their appearance in other areas is not excluded.