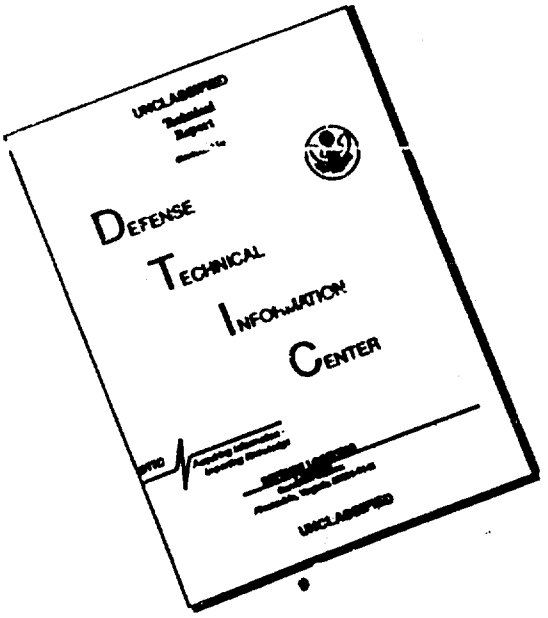
TRANSLATION NO. 74

DATE:

DEPARTMENT OF THE ARMY
Fort Detrick
Frederick, Maryland

DISCLAIMER NOTICE



THIS DOCUMENT IS BEST QUALITY AVAILABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

Zhurnal mikrobiologii, epidemiologii i immunobiologii (Journal of Microbiology, Epidemiology, and Immunobiology), No. 1, 1955, Moscow, Pages 92-97

Fundamental Antitularemia Measures and Trends in the Work of Tularemia Control Stations, by V. I. Vashkov and Ye. V. Pronina

The history-making Nineteenth Congress of the Communist Party of the Soviet Union in its directives pointed out that medical personnel must direct their efforts towards the solution of the most vital problems of public health concentrating their special attention of matters of prophylaxis. Medical workers of epidemiologic sanitation agencies, including tularemia control stations, do their best to prevent infectious diseases, with tularemia being one of them.

Soviet scientists (Khatenevich, Pavlovskiy, Olsuf'yev, Rudnev, Mayskiy, and others) have done a great deal of work on the study of epidemiology, diagnosis, clinical course, treatment, microbiology, parasitology, immunology, and prophylactic vaccination of tularemia. The data obtained by them and also the experience of practical workers (Somov, Ravdonikas, Sil'chenko, Karpov, Myasnikov, Borodin, and others) makes it possible to work out a precise plan of measures aimed at the prevention of this disease among people.

The fundamental ~~main~~ measures of control which are important ~~even~~ now were:

(1) vaccination of the people against tularemia;

(2) study of regional epidemiology of tularemia, counting rodent populations, establishing outbreaks of epizootic among them, preparation of epizootological and epidemiological forecasts of tularemia;

(3) increasing the knowledge of medical personnel on matters of diagnosis,

clinical course, treatment, and prophylaxis of tularemia;

(4) organization and implementation of measures for the eradication of rodents in the fields and in settlements;

(5) implementation of general sanitation measures;

(6) educational work among the people on the questions of sanitation and personal prophylaxis against tularemia;

(7) strengthening of tularemia control stations with personnel, improving professional qualifications of specialists of stations, supplying them with proper facilities and laboratory equipment.

Due to the efforts of medical personnel the incidence of tularemia now is only a part of the incidence of 1949. If we take the latter for 100 percent, the reduction of the incidence in 1950 amounted to 71.9 percent, and in 1951, 88.6 percent. Thus, in 1950 and 1951 due to the measures taken the reduction of the incidence was so successful that it became only one-seventh or one-eighth of the incidence of 1949.

The most important of the whole complex of measures of control of tularemia is vaccination of people against tularemia.

Mass prophylactic vaccinations in the RSFSR were begun in 1946. Each year saw the increase in the number of not only people who were vaccinated but also in the number of oblasts where vaccination was carried out. Now vaccination against tularemia is carried out in the Soviet Union on a large scale.

In several oblasts of the RSFSR a great deal of attention was paid to vaccination, and as a result during these years a large stratum of immune people was created. To this group belong the following oblasts: Voronezh, Kursk, Omsk, Novosibirsk, Orel, Rostov, Ryazan', Tula, Saratov, and others.

Mass vaccination in conjunction with other measures of control of tularemia unquestionably prevented large outbreaks of this disease among people during the years of tularemic epizootics. This contention is proved by the following data. In 1951 the number of rayons where higher mortality was registered was only one-fifth of the number in 1949. At the same time there were oblasts where the approach to this measure was not sufficiently earnest and the implementation of mass vaccinations was begun at the height or even on the downgrade of the epizootic. In such oblasts the formation of the immune group of people, as a rule, was belated. In such oblasts the higher incidence of the disease was observed. In individual oblasts (Kirov, Tyuman') the quality of vaccinations and the statistics of vaccination were inferior due to poor supervision. In some oblasts supervision of the use of the anti-tularemia vaccine was poorly organized. For the purposes of summation of the data on harmlessness and efficacy of live, both liquid and dry, tularemia vaccine the Ministry of Health RSFSR called two conferences at which information that testified to a high epidemiologic efficacy of the vaccine was presented.

Thus, on the average vaccine took in 90 percent of the cases, and with proper methods and proper storage of vaccine the inoculations were effective in 96-100 percent. The general reaction to the vaccination was insignificant and only in a small number of cases was it accompanied by a rise in temperature 38 to 38.5 degrees Centigrade and by an increase in size of the regional lymphatic nodes which disappeared in a few days. In extremely rare cases there were skin rashes of allergic nature during the second or third week after the vaccination.

With proper methods of vaccination the duration of the preservation of allergic reaction with positive results in the case of the overwhelming majority

of the people comprised not less than 5 to 6 years (the duration of observation) which evidently corresponds to the duration of immunity. According to the available data, vaccinated people very seldom contract tularemia. In a considerable number of instances these people actually were not vaccinated and were merely mistakenly recorded as such or they had some other disease rather than tularemia. They were diagnosed as tularemia sufferers without proper clinical symptoms, but merely on the strength of the allergic reaction.

Excellent results obtained with the timely use of the vaccine wherever there was a danger of the epidemic induced the Ministry of Health RSFSR to introduce in 1951 vaccination in the interepizootic period instead of vaccinating only in case of the danger of an epidemic. Planned vaccination has several advantages, specifically, it provides for a timely immunization to tularemia for the majority of people in enzootic regions.

Now in several oblasts there are very many rayons where all people have been vaccinated. In these rayons even during very intense epizootics there were no cases of tularemia among people.

In individual rayons by means of a selective test of the population through the injection of tularine it was established that only 35 to 40 percent of the people were immunized against tularemia, although it was reported that such a group comprised 95 percent of the population. This situation was created due to poor record keeping of vaccinations which were carried out every year on a different scale. In connection with this it is necessary to conduct in the immediate future a selective test of the people (an intraepidermal injection of tularine to 100 to 200 adults) in epizootic rayons where there are no records of previously vaccinated people or where vaccination was of poor

quality and to determine the actual numbers of immunized people. If it is discovered that less than 50 percent of the people have been immunized, then repeated planned vaccination should be organized. In case there occurs an epizootic of rodents, then secondary vaccination should be carried if less than 75 to 80 percent of the people have been previously immunized. Whenever there is a transmissive infection, then up to 90 to 95 percent of population should be vaccinated.

The question of when people should be revaccinated at present has not been finally decided. Generally it is thought that there are no reasons to revaccinate before 5 years are up (the period of observation).

The data obtained in the study of regional tularemia made possible the establishment of the basic sources of this infection in the RSFSR. These are: the common vole, the house mouse, the water rat. Much less important as infection sources are the hare, the muskrat, and the ticks. Recent research (Olsuf'yev) proved the great importance of iodidae ticks in the preservation of the causative agent of tularemia in natural food, especially in the interepizootic period.

In respect to the fundamental sources of infection the RSFSR can be schematically divided into three zones.

In the first zone the basic source of infection is the water rat, while other rodents are only of a slight importance. This zone includes oblasts of western and eastern siberia, of Altay, or the Urals, and oblasts of the north of the European part of the RSFSR and the Astrakhan' Oblast. It should be emphasized that during 1948 to 1951 there occurred in these oblasts mass tularemic epizootics among water rats; these epizootics lasted for 2, 3, and 4

consecutive years in the same foci (locations). In this group of oblasts infection is possible through hunting, transmission, and water. Epizootics occur in the spring and summer period. The Ural oblasts are somewhat of an exception: along with the above methods of infection, there were incidences of infection of people in the process of performing various kinds of farm work. Corresponding to the methods of infection in this zone may occur bubonic, ulcerous-bubonic, angina-bubonic, and, more seldom, eye-bubonic forms of the disease.

The second zone is the central and western oblasts of the RSFSR where the dominating role belongs to the common vole. The house mouse and the water rat here are of secondary significance. Epizootics of tularemia in this zone have been of varying intensity and distribution. As a rule, they would begin in the fall and winter period. Such epizootics occurred in the winters of 1948, 1949, 1951, and 1952. In some oblasts after winter epizootics there occured also limited epizootics among water rats also in the summer. For this zone characteristically infection often takes place while a man performs various kind of farm work, transmissive and water paths of infection and also infection at home occur more seldom. Clinically, the most prevalent form of the disease is centered in respiratory passages, rarer gastro-enteric tract is attacked.

The third zone is the south of the RSFSR. This zone is characterized by the predominating role of the house mouse with a lesser role of the common vole and water rat. Epizootics in the south usually begin a month earlier than in the central belt of the RSFSR. Contagion at home or in public places is most prevalent, although other paths of infection may also take place. Clinically the form of the disease is the same as the central belt. It is

characteristic that with the transmittal of the disease at home or in public places people of all ages may develop the disease, while in other zones the disease occurs mostly among working people participating in farm work.

The study of specific features of tularemia infection in RSFSR made possible the preparation of concrete plans of measures for each zone.

In order to be able to give a timely warning of the oncoming danger it is necessary to observe systematically, during fall-winter and spring-summer periods, the numbers of mouselike rodents, and prepare epizootological and epidemiological forecasts for individual ASSR's, krays, and oblasts. It should be pointed out that the most important measure often is not carried out, especially in oblasts where there are no tularemia control stations.

Within the system of measures designed to prevent tularemia of great importance is the training of medical personnel that would cover the matters of diagnosis, clinical course, treatment, and prophylaxis of the disease. For the purposes of such training it is necessary to conduct seminars and lectures on the subjects of diagnosis, prophylaxis, and clinical features of tularemia supplementing them with practical exercises in laboratory methods of diagnosing and in the technique of vaccination. It should be pointed out that in danger areas up to now not enough attention has been paid to this measure. Thus according to the data available to us, during the last 3 years, there were trained in RSFSR 3,500 physicians of the general medical network in rural areas and 4,110 medical workers with intermediate schooling. As a result of the shortage of trained doctors in instances of individual cases of tularemia several time the diagnosis of the disease was quite late, after 1 to 2 months, because of which urgent measures of tularemia control were taken also

belatedly. To such oblasts belong Krym, Tymen' and others and also Krasnodar and Altay krays. In Kirov, Vladimir, and Velikiye Luki oblasts and in Komi ASSR no training of physicians is being done.

Not enough attention is paid to such an important measure as public health educational work among people on the problems of the prophylaxis of tularemia. There are not enough lectures or talks, and popular literature - posters, leaflets, and brochures - is published in very limited quantities.

It should be also pointed out that fundamental measures of eradication of natural foci of tularemia and the prevention of epizootics are not sufficiently energetically implemented in some localities. It should not be forgotten that such measures as better farming methods and timely harvesting unconditionally hinder propagation of rodents. Epidemiologic sanitation and tularemia control stations insufficiently enlist oblast agricultural agencies in campaigns against rodents, and such agencies often begin the campaign when the epizootic among rodents has already reached the climax.

An important measure of the prevention of the disease is the protection of water sources against their contamination by rodents, nevertheless, in several oblasts the authorities relaxed their attention to this problem.

For instance in 1950, 83,000 wells were inspected and 49,500 wells were repaired, in 1952 only 12,500 wells were inspected and 5,000 wells were repaired.

The objectives of tularemia control stations include planning, organizing, and implementing all prophylactic measures designed to protect the people from the tularemia disease. In order to implement this task successfully it is necessary to study the regional epidemiology while constantly observing changes

in the populations of rodents, watch for the onset of epizootics, daily train medical personnel in methods of timely diagnosing, and conduct public health educational work among the people. It is necessary to organize vaccinations and constantly watch over the implementation of the vaccination plans, the quality of vaccination, and also over the eradication of rodents. The tularemia control station must coordinate its fundamental measures with oblast or kray epidemiologic sanitary stations. The absence of liaison between tularemia control stations and epidemiologic sanitation stations considerably detracts from success in operations.

Personnel of tularemia control stations should visit rayons as frequently as possible and have close ties with rayon epidemiologic sanitation stations, rayon hospitals, district physicians, and other rayon administrative agencies (rayispolkom [rayon political administration committee], rayzdravotdel [rayon public health department], and others), and have volunteer correspondents who could send information on the changes in the population of rodents. The majority of experts of tularemia control stations understand their tasks. They systematically visit rayons with the idea of implementing within them the necessary measures. Such experts become known and respected by local medical personnel.

Several tularemia control stations are successful in achieving the implementation of tularemia control measures. As a result of their energetic activity they won the respect of kray and oblast ispolkoms [executive committees].

Some executives of tularemia control stations do not ascribe due importance to the laboratory phase of the work. As a result of it, such stations have not become organizational centers of antitularemia measures.

Personnel of tularemia control stations must conduct their large and important work fortifying it with scientific research. As fundamental subjects

for scientific studies we list the following: the study of efficacy of vaccinations against tularemia, the study of regional epidemiology, the study of ecology of water rats and of other rodents, the elaboration of methods of rodent control in the fields, in stacked bundles of grain and in buildings in rural localities, in woodlands, in open reservoirs, and processing of the data on the improvement of epidemiologic forecasts.

For the sake of further reduction and eradication of the tularemia disease in the next few years, maximum attention should be paid to the following measures.

First, in all epizootic and adjoining rayons and also in rayons with large populations of mouselike rodents, including the water rat, it is necesaary to complete within the next one to 2 years vaccination of the whole population against tularemia.

Second, precise documented records of the number of people vaccinated and the quantity of vaccine used should be kept. Further studies of the duration of immunity due to vaccination should be made and optimal periods for revaccination should be established.

Third, in every epizootic and adjoining rayons physicians of rural localities and feldshers of independent medical points should be trained in diagnosis, clinical course, treatment, and prophylaxis of tularemia, and to improve systematically the professional skill of experts of tularemia control stations should be improved systematically.

Fourth, mouselike rodents should be constantly watched and an epizootic among them should be discovered as quickly as possible; also the deratting operations and eradication of ticks should be supervised. Natural foci of tularemia should be studied and methods and means for their eradication should

be worked out. Systematic supervision over the implementation of general sanitation measures - in rural localities, and first of all, over the sources of water for community use - should be organized.