

UNCLASSIFIED

AD NUMBER
AD838588
NEW LIMITATION CHANGE
TO Approved for public release, distribution unlimited
FROM Distribution authorized to U.S. Gov't. agencies and their contractors; Critical Technology; JUL 1968. Other requests shall be referred to Department of the ASrmy, Fort Detrick, MD.
AUTHORITY
SMUFD D/A ltr, 14 Feb 1972

THIS PAGE IS UNCLASSIFIED

AD 838588

TRANSLATION NO. 1897

~~DATA 13~~

DATE: July 68

DDC AVAILABILITY NOTICE

Reproduction of this publication in whole or in part is prohibited. However, DDC is authorized to reproduce the publication for United States Government purposes.

STATEMENT #2 UNCLASSIFIED
This document is subject to special export controls and each transmittal to foreign governments or foreign nationals may be made only with prior approval of Dept. of Army, Fort Detrick, ATTN: Technical Release Branch/TID, Frederick, Maryland 21701

DEPARTMENT OF THE ARMY
Fort Detrick
Frederick, Maryland

AUG 10 1968

SYMPTOMLESS ANTHRAX IN HUMANS

Simai, G. J.

SYMPTOMLESS ANTHRAX INFECTION IN HUMANS

Sinai, G. J. Symptomless anthrax infection in humans.
Zeitschr. Immun-forsch. 79: 199-205, 1933.

The human being is little susceptible to anthrax infection; the number of diseased is, in proportion to the number of people who come into direct or indirect contact with infectious material, slight. In this respect we can make the following observation in one of the fields of Kasakstan.

On the 10th of July there appears in the expedition ambulance a Cosak N with 39.6° and with a typical malignant pustule on the chest, between the breast and the collar bone on the lin. mamill. sin.

The diseased, 19 years old, unmarried, appeared with his mother and sister in the vicinity of the main sewer around the Reissowehos.

In the anamnesis no further diseased were indicated. The last diseased had begun on July 8 in the form of a general indisposition, abating, and then a sensation of pain in the pleura. The sick were not bedridden the whole time, and only the increasing edema and high temperature forced him to seek medical aid (10 kilometers from the expedition base).

The diagnosis of anthrax was ascertained by bacterioscopic as well as bacteriologic methods by means of isolating a typical anthrax culture. The patient received a 0.45 ccm Neosalvarsan intravenously, after which he was hastened to the nearest Turkish station. The temperature was arrested after 3 days. After 10 days he was discharged cured, with the obligation of coming daily to bandage the granulating wound.

For the explanation of the epidemiology of the case in question we went with Prof. Popoff to the nomadic bed of the Cosaks and searched there carefully for the source of the disease.

As a result, of this investigation has proved that on

July 6 a yearling calf belonging to the patient stopped eating, lay immobile and appeared very ill. Thereupon it was resolved to kill the calf, which patient N did with an old woman who helped him, also carried out later. The skin was buried. The bacteriologic tests of the blood traces on the place of slaughter resulted in the sowing of anthrax bacilli. The meat was consumed by the inhabitants of Aul. The meat used as nourishment was cooked (in an open dish on a grate); it is presumed that it was cooked thoroughly, the more since the Kosaken like to eat the meat in great pieces with large bones.

How many people had eaten this meat cannot be ascertained. The intestines of the animal were buried, the cooked bones of the domesticated animals were used as food. Aside from Aul no others diseased with anthrax occurred, notwithstanding that a surprising majority of the population had eaten the cooked infected meat.

We have removed blood from 39 Kosaks, to carry out a precipitation test with anthrax. The precipitated serum had been prepared at Waronish Veterinary Institute, we used the examined serum as an antigen. To the control, a precipitation reaction with sodium chloride solution and serum was administered to such people (see Table 1) who had not come in contact with the anthrax virus.

In 15 out of 38 cases we obtained a positive precipitation reaction, therefore only thirteen people according to their statement had eaten the meat and 2 had not eaten it. Of 23 cases with negative precipitation reaction supposedly 17 persons had eaten the meat and 6 had not.

In any case one must assume that in all probability the vast majority of the population of Aul had eaten the infected meat.

The fact that 40% of the population by eating the infected meat, manifested a positive precipitation reaction, it remains for us to clarify how many and how frequently the local population generally come in contact with the anthrax infection. Hereby we must note that during a very long job in the nomadic order by the local inhabitants one hears more frequently (russian Kosaken) that sick cattle were slaughtered shortly before their death and that after eating the meat wither isolated cases of illness were noticed or generally none occurred.

First and foremost we have examined the working men of the crude leather collectors: wool laundry and leather factory, the raw material collected with a radius of 200 kilometers and therefore could give us particular information about the development of anthrax among the population. With this purpose we have taken proofs in the factory and the wool laundry, if possible one of each of the leather and skin company and performed thermoprecipitation with a precipitating anthrax serum according to Ascoli and Valenti. All tests as well as the inoculation carried out in culture media resulted negative. Besides there was a complete examination of the serums of the working men present, 190 of the number; carried out in both factories. Furthermore we continued our

investigation among the nomadic population of the area adjoining Aul and among the shepherds (see Table 1). The table shows, that in the village where there is no information about the existence of an epizootic and no contact of any kind with infectious material the existing precipitation reactions remained fixed.

Table 1

	Inhabitants			Precipitation reaction		
	HER	2	3	HER	2	3
9 Aul (region of epizootic)	27	20	10	15 ¹⁾	23 ²⁾	19
10 Aul (neighborhood)	4	40			40	
5 Aul		33			33	
Slaughterhouse and shepherds		6			6	
Wool laundry		122			122	
Leather Factory		68			68	

1) Having eating positive meat 13
Having not eaten positive meat 2

2) Having eaten positive meat 17
Having eaten negative meat 6

On the basis of this table one indeed cannot assert that this population group had not come in contact with anthrax but also if such contact existed, then in any case formerly significant.

That is already seen, that in the case of the 2nd serum examination which took place one month after the first, in the case of 2 Kosaken out of the 6 Aul, in the case of which the first time, recently after the eating of the infected

meat, a positive precipitation with anthrax existed, now the reaction turns out negative.

Intestinal anthrax already interested the bacteriologists since the time of Pasteur. It has been established by a whole series of epidemiologic observations that the eating of anthrax infected meat is not harmful (Abel).

In the report of Osol and Winogradow who had examined the black soil region for anthrax, the committee in 1928 used this method:

The eating of meat infected with anthrax occurred often in village inhabitants, which nevertheless seldom caused intestinal anthrax. Worthy of note are the details by Ostertag: in a Swiss village 300-400 people have eaten meat infected with anthrax, of them only the butcher who had a small wound on his hand became ill. Of the other observations we will only mention the one by Dr. Nikolaew (1928). The last reported case of a family, consisting of 6 persons, who had all eaten infected meat, only 2 persons became ill and also not at the same time.

He mentioned another case in the hospital, where a child was admitted, who complained of nothing but diarrhea which stopped after a day. The father of the child died 5 days before. The feces examination of the child, which was sent to the Bacteriological Institute revealed anthrax bacilli.

An analogous observation can be made with experimental infection as well as the vegetative forms also with spores in the case of little susceptible animals.

Brotzu fed the dog either with non-sporing cultures or with meat of animals dead from anthrax and thereby found in the animal anthrax bacilli and spores. On the basis of this he accepted, that spores originate in the intestine and can be separated from the feces.

Behring had been able to observe in the case of adult guinea pigs after incorporation of non-sporing bacilli without disease if they separate the bacilli from the feces very quickly.

Returning to our own observations, we must emphasize that the precipitation reaction performed by us has brought about the detection of the existing anthrax antigen in the

blood. Doubtless this antigen can be found only during an infection even if it has no symptoms; the same cannot be detected any more in the blood after the expiration of the infection.

Our results were confirmed by the work of Kritschewski and Messik, "On immunity against anthrax bacilli".

These authors conducted their experiments on rats, an animal little susceptible to anthrax. By incorporation of anthrax bacilli no infection appeared in the rat, nevertheless anthrax antigen could be detected in the organs by thermoprecipitation according to Ascoli.

It must be emphasized that it did not succeed in this case in isolating anthrax bacilli from the rat organs; the results were also negative to the infection of mice with these rat organs.

The authors came to the conclusion that the appearance of antigens in the rat organs point to germs sprouts even if the latter occurs without symptoms. The control test performed by the authors, which should be explained, whether the positive Ascoli reaction is caused perhaps by the introduction of anthrax bacilli precipitated negative thereby would consequently the symptomless infection would be detected in the infected rat. Kruska (1927) confirmed that the feeding of anthrax bacilli by mouth as well as by rectum to adult guinea pigs and rabbits caused the death of the same; he considered the anthrax bacilli introduced and their spores as saprophytes. In order that an illness take place, according to Kruska a trauma must be present, it may be in the form of a mechanical lesion of the membrane or in the form of an erosion of the mucous membrane. This method explains only the pronounced infection and we will show observations thus the intricate correlation which exists between the infectious

and macro-organisms generally not cleared.

The research of the vomiting inhabitants serve us on the one hand to control the⁽¹⁾ specificity of the results minted in Aul, on the other hand the absence of tests would be detected by the vomiting population. Doubtless some of the workers in the skin factory had formerly come in contact with anthrax material.

Consequently there could be observed only in one of the 48 people who had eaten infected meat, a clear clinical picture of anthrax sickness; in the case of 15 people the same disease symptoms were observed while antrax antigen could be established in the blood serum. In 269 serums of vomiting inhabitants who had been tested the same way the antrax antigen could however not be detected.

SUMMARY

1) The anthrax infection in the case of humans can proceed without any visible symptom (symptomless infection)

2) With the help of precipitation reaction it ~~succeed~~ in detecting the anthrax antigen ~~in~~ blood of an animal, however only in the course of the infection; after the discharge of the same the antigen disappeared from the blood.

3) On the basis of our observations one can, assume that the distinct clinical form of anthrax infection occurred very seldom ~~as~~ the symptomless form, of the same.

4) Unfortunately we have neglected a reason in our texts: we have omitted testing the person with positive precipitation reaction of bacilli secretion.

We maintain it is not necessary to call attention to the epidemiology that consists in the possibility of symptomless infection in the cases where the infectious condition has appeared simultaneously in whole groups of people. Such cases must be used in our opinion in order to solve the epidemiological question, namely if in such cases the secretion of anthrax bacilli takes place.

Consequently the illness observed in a person in Aul who had eaten the meat infected should be considered not as an exception but sooner as a rule. According to our observations one can suppose that the cases often take place with symptomless infection.

LITERATURE

- 1) Ascoli, Virchows Arch., Bd. 213, S. 181.
- 2) Abel, Zentralbl. f. Bakt., Bd. 18, 11, 5/6.
- 3) Brotzu, zit. nach Sanarelli.
- 4) Isabolonski and Pazevich, Russ. Vratsh, 1942 No. 18.
- 5) Januschke, Seuchenbekämpfung, 1927, 11.1.
- 6) Gregersen, Zentralbl. f. Bakt. Bd. 77, No. 4.
- 7) Kritschewski and Messik. Zeitschr. f. Immunität., Bd 66, 1930.
- 8) Michin, Mikrobiologie (russ.) 1929.
- 9) Nikolaeff, Veatscheb Gazeta, 1928, No. 2, S. 100.
- 10) Ozol and Vinogradoff, Hygiene i Epid., 1929, No. 9.
- 11) Rochs, Virchows Arch., Bd. 222, S. 322.
- 12) Sanarelli, Krankheitsforschung, Bd. 3, 1926.
- 13) Uffenheimer, Arch. f. Hyg. Bd. 55, 1906.
- 14) - Handb. d. pathog. Mikroog., 3. Auflage.