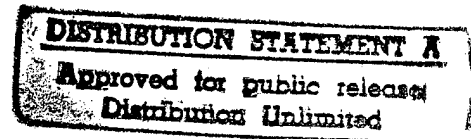


TRANSLATION 866 (T866)
MEDICAL ZOOLOGY DEPARTMENT
UNITED STATES NAVAL MEDICAL
RESEARCH UNIT NUMBER THREE
CAIRO, EGYPT



TRANSLATION FROM RUSSIAN. BUTENKO, A. M., CHUMAKOV, M. P., BASHKIRTSEV, V. N., ZAVODOVA, T. I., TKACHENKO, E. A., RUBIN, S. G., & STOLBOV, D. N. (1968)*. [Isolation and investigation of Astrakhan strain ("Drozdov") of Crimean hemorrhagic fever virus and data on serodiagnosis of this infection.] In: Tickborne encephalitis, hemorrhagic fevers, and mosquito-borne arboviral infections, edited by Chumakov, M. P. Mater. 15. Nauch. Sess. Inst. Polio. Virus. Entsef. (Moscow, October 1968), (3):88-90.

In 1967, newborn white mice (NWM) were used for CHF virus isolation and the CF test with CHF convalescent sera was used to check specificity of experimental infection and death of NWM. Antigens were prepared from NWM brains by the borate-saline extraction method. As a result, CHF virus strain was isolated from the blood of a CHF patient in Astrakhan and named "Drozdov" after the patient's family name. The strain may be regarded as the prototype of Astrakhan CHF virus strains.

Strain Drozdov caused death of practically all infected NWM following 1st passage. It also proved to be pathogenic for newborn white rats (NWR). The incubation period in NWM and NWR lasted for 4-7 days. The virus titer in the brain of these animals was $LD_{50} 10^4-10^5$ (by titration in NWM, intracerebral infection). The virus was apathogenic for adult white rats, guinea pigs, Syrian hamsters, rabbits, and green monkeys. From preliminary data, it caused no CPE in 7 primary and reinoculated tissue cultures tested but it reproduced in some of them.

The virus was passaged 27 times in NWM and NWR. Strain Drozdov was highly sensitive to sodium desoxycholate, ether, and chloroform, filtrated through millipore filter with pores 220 μ in size, resisted freezing for a long time (on dry ice), and lyophilized well, but became completely inactivated following exposition at 60°C for 15 min or at 37°C for 7 hrs. Attempts to obtain a hemagglutinating antigen from the brain of infected animals and culture fluid of infected tissue cultures were unsuccessful.

* Institute of Poliomyelitis and Viral Encephalitides, USSR Academy of Medical Sciences, and Astrakhan Regional Sanitary-Epidemiological Station.

19960710 037

BEST QUALITY PRINT COPY

Hyperimmune sera to be isolated agent were obtained from guinea pigs, white rats, white mice, and Syrian hamsters. These sera actively reacted by the CF test with the virus antigen prepared from infected NWM and NWR brains. This antigen did not react by the CF test with control sera from healthy persons and persons sick with different other diseases (hemorrhagic fever with renal syndrome, West Nile fever, exanthematous fever, etc.) or with several sera from normal and hyperimmunized animals.

We made serological tests to differentiate strain Drozdov from 9 natural murine viruses; hemorrhagic fever with renal syndrome virus, and several arboviruses: West Nile, tickborne encephalitis, Omsk hemorrhagic fever, Kemerovo, Kyasanur Forest disease, Tahyna, Calovo, Hp-320, and Hp-9.

Antigen Drozdov reacted regularly, specifically only with CHF convalescent sera by the CF test.

On investigating 11 CHF cases in 1967 in Astrakhan Oblast, CHF diagnosis was serologically confirmed in 10.

In 1966, to obtain therapeutic sera, blood samples were taken from persons who had recovered from typical CHF in Astrakhan Oblast. All 16 sera from these persons proved to be positive by the CF test.

Among 16 sera collected in the fall of 1963 from persons who became infected with CHF in Astrakhan Oblast in 1959, 1962, and 1963, 9 were CF-positive, 1 questionable, and 5 negative. In 1963, on investigating serum samples from 17 patients in Astrakhan Oblast, we recorded increased antibody titers in 9 cases and negative results in 8 cases. It should be mentioned that the sera collected in 1963 have been kept before tests for 4 years at 4°C. CHF virus antigens gave positive CF results with CHF patient sera from Rostov Oblast, Tadzhik SSR, and Bulgaria.

Results from the CF test with 96 sera from persons who became infected with CHF in 1954-1967 in Astrakhan and Rostov Oblasts, Tadzhik SSR, and Bulgaria showed specific reactions with CHF virus antigens in 72% of cases. Among 50 persons infected in these regions in 1965-1967, antibodies were absent only in 4. Thus the data from the most recently investigated sera showed specific reactions in 92% of the cases.

Sucrose-acetone antigens prepared from the brain of NWM and NWR infected with CHF virus gave specific reactions by the precipitation test with antibodies in CHF patient sera. The data on parallel investigations of CHF patient sera by the CF and precipitation tests showed practically complete qualitative coincidence of these 2 test results.

Results from CF and precipitation tests were confirmed by positive neutralization (N) tests of strain Drozdov with CHF patient blood sera. The N test was made in NWM (intracerebrally infected) or in primary Syrian hamster kidney cell culture by the interference reaction of CHF virus with vesicular stomatitis virus (tests by E. A. Tkachenko). Direct and indirect immunofluorescence tests in tissue cultures and infected NWM brain sections also confirmed specific relationship between strain Drozdov and antibodies in CHF convalescent blood sera (tests were done with V. Ya. Karmysheva and A. P. Savinov).

Thus, it may be concluded from these data that the strain isolated from the blood of a typical CHF patient in Astrakhan Oblast using NWM is a filtrable virus specifically reacting only with CHF patient sera and therefore may be considered as the etiological agent of CHF.

These data allow us to assume the etiological relationship and identity of CHF infections in different areas of this infection range.