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Two cases of hydrophobia in the Republic of Tatarstan: In vivo and postmortem laboratory diagnosis

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Abstract

The results of rabies in vivo and postmortem laboratory detection in two cases registered in the Republic of Tatarstan are reported: a victim bitten by a wolf in 2002 and another one bitten by a stray dog on Goa Island, India, in 2013. In the patient bitten by a wolf cornea imprints studies using the method of fluorescent antibodies (MFA) showed rabies-positive result 6 days before the patient's death. The results were confirmed by postmortem examination of different parts of the brain and salivary glands using the MFA, enzyme-linked immunosorbent assay (ELISA), optical microscopy, and bioassay methods. In the patient bitten by a stray dog the rabies virus specific antigen was detected by eye cornea studies using the MFA method and saliva studies using the ELISA. The rabies virus genome was also isolated from saliva and tear fluid using nested reverse-transcription polymerase chain reaction (RT-PCR) 9 days before the patient's death. The in vivo studies results were consistent with the postmortem study of different parts of the brain using the MFA, enzyme-linked immunosorbent assay (ELISA), optical microscopy, and bioassay methods. All the infection-positive results of both in vivo and postmortem studies were consistent with the clinical studies, i.e. rabies diagnosis was confirmed. The analysis of the rabies virus gene G fragment nucleotide sequence of 238 nd length showed a slight difference between the studied isolates (2 rabies) and the RABV AY956319 (1.68%), difference by 10.5% from the Vnukovo-32 vaccine strains and by 10.9 % from the SAD B19 rabies strain, respectively (rabies viruses of 1st genotype). It was also significantly different from the lissaviruses of 2,4,5, and 6 genotypes (21.0-32.7%). The obtained results indicate phylogenetic closeness of the studied isolates (2 rabies) with the RABV AY956319 rabies virus strain belonging to the 1st genotype.

Keywords

Enzyme-linked immunosorbent assay, Fluorescent antibody method, Hydrophobia, In vivo and postmortem diagnosis, Phylogenetic analysis, Polymerase chain reaction, Sequencing