GENETIC CHARACTERIZATION OF LARGE (L)-SEGMENT GENOME RODENT PUUMALA VIRUS STRAIN KAZAN

Abstract. In this paper, the authors characterized the large (L)-segment of PUUV strain circulating in the republic of Tatarstan and compared it with PUUV strains from nearby regions. Phylogenetic analysis results showed variability (6%) between L segment sequences of PUUV in Tatarstan and nearby regions of Samara and Ufa also, the authors found two genetically distinct clusters of PUUV circulating in Tatarstan.

Keywords: Puumala virus; Hantaviruses; Bunyaviridae; Hemorrhagic fever with renal syndrome.

Puumala virus (PUUV) infection has alarmed global health attention since it was isolated in 1978[1]. PUUV has a single stranded negative sense RNA genome. It belongs to the genus Hantavirus, family Bunyaviridae. PUUV causes mild form of the hemorrhagic fever with renal syndrome referred as nephropatia epidemica[2].

The aim of the study was to sequence the L segment of PUUV circulating in republic of Tatarstan, Russia.

Total RNA extracted from the lung tissue of infected rodents and used to generate cDNA. cDNA was used as a template for PCR amplification of the L segment. Nucleotide sequencing was done using ABI PRISM Dye terminator sequencing kit. Obtained L segment sequences were analyzed using lasergene package (software)[3] and compared to L segments of PUUV circulating in Russia.

The total of 6550 nucleotides of the PUUV L segment was sequenced. Also, analysis of the coding amino acid sequence was performed.

Phylogenetic tree analysis showed that all PUUV sequences obtained in this study were PUUV. Phylogenetic analysis on partial L-segment revealed 2% variability within the L-segment sequences among the PUUV strains circulating in Republic of Tatarstan. More variability (6%) was found between L segment sequences of PUUV in Tatarstan and nearby regions of Samara and Ufa.

These data suggests that PUUV circulating in republic of Tatarstan are closely related to other PUUV endemic in nearby regions. However, within the PUUV circulating in Tatarstan, there are two genetically distinct clusters.

REFERENCES

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