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Antigenic properties of the recent human influenza A (H3N2)viruses isolated in MDCK and MDCK-Siat1 cells

Content

Keywords: influenza, A(H3N2), etiology, virus isolation, antigenic analysis

METHODS: Virus isolation in MDCK and MDCK-Siat1 cells, identification, antigenic analysis in HI(hemagglutination inhibition) and MN (microneutralization) assays with the panel of rat and ferret polyclonal- post-infection antisera,

RESULTS: During the epidemic season 2016-2017 influenza A(H3N2) viruses were dominant among the influenza A and B viruses that were derected in Saint-Petersburg. rt-PCR diagnostics of influenza indicate that A(H3N2) viruses comprised 55%, A(H1N1)pdm09 - 0,8%, influenza B Victoria viruses – 36%, B Yamagata lineage– 0,2%, A unsubtyped - 8%. 150 samples were chosen for virus isolation in two cell cultures in parallel. Overall, 107 strains were isolated in MDCK cells and 116 strains in MDCK-Siat1 cells.

In recent years influenza A(H3N2) viruses isolated either in MDCK or MDCK-Siat cells are difficult to characterize in HI assay due to their week or absent ability to agglutinate human RBCs. All isolated strains were titrated with human RBCs in the presence of 20nM Oseltamivir carboxylate. 11,1% of the viruses isolated in MDCK-Siat1 cells and 30.6% MDCK- variant viruses did not show the drop in titre in the presence of oseltamivir added to circumvent NA-mediated binding to the RBCs. However, 29,6% MDCK-Siat1 viruses and 18,1% MDCK viruses had 2-fold drop titre; 4-fold drop titre was registered for 18,5% MDCK-Siat1 viruses and 14,3% MDCK strains.

Strains isolated in parallel were subjected to the comparative antigenic analysis in HI-assay with 20nM oseltamivir carboxylate or MN-assay. HI-assay was carried out for the strains, which had sufficient titre in the presence of 20 nM Oseltamivir carboxylate. Viruses isolated from the same samples in MDCK-Siat1 or MDCK cells have shown similar results in HI assay. All analyzed strains were recognized by the antisera raised against A/Hong Kong/4801/14 (MDCK isolate) and A/St. Petersburg/80/2014 at the titres within 1 to 4-fold of homologous titre and were not recognized by the antisera raised against strains of 3C.3a group - A/Switzerland/9715293/13 (CE) and A/Stockholm/06/14 (CE).

Conclusion: Antigenic properties of recent human influenza A(H3N2) viruses do not differ between the strains isolated in MCK-Siat1 or MDCK cells.

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