SERO-EPIDEMIOLOGICAL STUDIES OF INFLUENZA IN VARNA REGION FOR THE PERIOD 1990-2004

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SUMMARY

With modern methods for studying antigenic structure and some biological properties of 10 of isolated strains influenza type A were examined their haemadsorption, haemagglutination, inhibitorsusceptible, eluent, pathogenic, toxic and immunogenic activity. The studies showed continuing active circulation of influenza type A viruses with formula H_3N_2 , antigenically similar to standard strains A/Washington/15/91, A/Beijing/32/92, A/Johannesburg/33/95, A/Uhan/359/95, A/Sidney/5/97 and A/Moscow/1/99 (H_3N_2), with the respective biological properties.

Key words: Influenza virus, antihaemaglutinine, titers of antibody, haemagglutination inhibition

It is known that infectious process is relationship between macro and microorganisms. The epidemiological process is a complex self-regulating system, influenced by social and nature factors of relation between heterogeneous populations of human and microorganisms. Based on this definition, when studying the specialties of epidemiological process of Influenza is necessary to pay attention especially to the changeability of Influenza virus, its way of distribution and the resistance of macro organism (7,8,9).

The specific immunity of the population to Influenza virus has the leading role in forming and progress of the epidemiological process (1,2,3).

The aim of this study is to determine the mean geometrical titers of antihaemaglutinine Abs to different strains of Influenza virus type A (4,6).

MATERIALS AND METHODS

16000 single serum samples of healthy persons from different age-groups from Varna region were tested. Our studies were performed using Haemagglutination inhibition reaction (5) with 9 and 7 antigens of Influenza virus type A strains with antigen formula H_1N_1 (A/Chile/1/83, A/Taiwan/1/86, A/Singapore/6/86, S.Carolina/6/88, A/Victoria/36/88, A/Texas/36/91, A/Bern/7/96, A/New Caledonia/20/99) and H_3N_2 (A/Mississippi/1/85, A/Sankt-Peterburg/360/86, A/Shanghai/11/87, A/Johannesburg/33/94, A/Wuhan/359/95, A/Sidney/5/97, A/Moskow/10/99, A/Panama2007/99) respectively.

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RESULTS AND DISCUSSION

The dynamic of mean geometrical titers of antihaemaglutinine Abs, directed to reference Influenza virus type A (H_1N_1) strains are shown on fig. 1. We proved that titers varied between 2 (A/Taiwan/1/86) – 1999 to 20 (A/New Caledonia/20/99) – 2003.

The geometrical titers of antihaemaglutinine Abs against reference Influenza virus type A (H_3N_2) strains are shown on fig. 2. They vary between 2 (A/Johannesburg/33/94, A/Wuhan/359/95) - 2000-2001 to 10 (A/Sankt-Peterburg/360/86) - 1992-1995 and Moscow 10/99 – 2003-2004.

Fig. 1. The dynamic of mean geometrical titers of antihaemaglutinine Abs, directed to reference Influenza virus type A (H_1N_1) strains

CONCLUSIONS

Ab titers after epidemic usually don't reach high values and comparatively quickly decrease during the next year. These results in some cases reflect the epidemiological situation - viruses type A (H_3N_2), and in other cases they have

to be interpreted as a result of anamnestic reactions to former strains, under the influence of diseases, caused by newer strains (H1N1). The serologic indices of the collec-

Fig. 2. The geometrical titers of antihaemagglutinine Abs against reference Influenza virus type A (H₃N₂) strains

tive antiinfluenza immunity of the population are higher for Influenza Virus type A (N1N1) (0-20) in contrast for type A (H3N2) (0-10). This is probably a result of the limited circulation of the later virus.

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