

ISOLATED INFLUENZA VIRUSES FROM CLINICALLY HEALTHY CHILDREN AT THE BEGINNING OF THE INFLUENZA WAVE IN 1983

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The recent years are characterized by a complex epidemic situation concerning the circulation of Influenza viruses (IV) from type A among population. From one hand across the world are constantly distributed and are the reason for epidemic waves the new antigenic variants of IV A(H3N2), A(Texas/1/77) and A(Bangkok/1/79). From the other hand since 1977 other two variants of virus A/H1N1/:A/USSR/90/77 and A/Brasil/11/78 circulate simultaneously (1, 2, 5). It is a question if the latter will replace in the nearest future the former one from the circulation. Recent investigations already give additional information about the problem.

During the first third of 1983 in our country developed an influenza epidemics with various intensity and duration for the different regions; it was characteristic concerning etiology by parrallel circulation of both subtypes of IV A: A/H3N2/ and A/H1N1/ as well as the prevailing role of the first subtype in the majority of cases (Information Bull., 1983).

In February 1983 was the beginning of the influenza epidemics in Tolbuchin area; it was with high intensity, spreading over all age groups, but most of all children between 4 and 7 years.

The object of the present study was to isolate already circulating IV from children who were in contacts with ill in their schools or gardens and to determine the immunological background of the beginning of influenza infection. The age of the children under study was between 3 and 10 years. It is well known that children contingents are most oftenly affected by influenza infections provoked with new shifts or drift-variants of the virus (1).

Material and methods

The materials (nasal secretion and single serum sample) were taken from 206 children during the beginning of the influenza wave in Tolbuchin area (February, 1983). The children were between 3 and 10 years old, from different collectives; they were all clinically healthy, but in contacts with other children suffering from influenza already.

The materials were taken by standard methods. By the nasal smears were infected 9—10 day-old chicken embryos applying the routine technique and at least 3 passages. By the single serum samples was set reaction delayed haemagglutination applying the micromethod and using influenza diagnosticums produced with most actual epidemic strains: A/USSR/90/77/H1N1/, A/Brasil/11/78/H1N1/, A/Texas/1/77/H3N2/, A/Bangkok/1/79/H3N2/, A/England/12/64/H2N2/ and B/Singapore/222/79.

The typing of the isolated strains was done by reaction delayed haemagglutination — virological variant with the help of referent hyperimmune sera against the above-cited actual epidemic strains. The strains were tested for inhibition-sensitiveness towards normal sera of horses, guinea-pigs and cocks.

Results and discussion

206 single serum samples of the children were tested. The results gave certain data concerning the immunological background of the influenza wave in Tolbuchin area. We determined the average geometrical titres of the antibodies (antihæmagglutinins) and the percent of the children with low antibody titres (up to 1:20).

Table 1 shows the titres of antihæmagglutinins; the average titre towards variant A/USSR/90/77/H1N1/ was 30.33; towards A/Brasil/11/78/H1N1/ — 37.78;

Table 1

Results of serological investigations by reaction delayed haemagglutination in average geometrical titres of antihæmagglutinins

Strain used as antigen	Average geometrical titre
A/USSR/90/77/H1N1/	30.33
A/Brasil/11/78/H1N1/	37.78
A/England/12/64/H2N2/	7.58
A/Texas/1/77/H3N2/	52.35
A/Bangkok/1/79/H3N2/	71.47
B/Singapore/222/79	10.03

towards the variants of IV subtype A/H3N2/:A/Texas/1/77 and A/Bangkok/1/77 the average geometrical titres were 52.35 and 71.47 respectively. It could be seen that there was a stable level of antibodies at the beginning of epidemic wave towards these variants of subtype A/H3N2/ among the studied collectives of children.

Table 2 representing the percent of children with low antibody titres (up to 1:20) towards the same strains shew that the corresponding values of the titres were as followed: 15.04 and 9.22 against 35.43 for A/USSR/90/77 and 32.52 for A/Brasil/11/78. Towards A/England/12/64/H2N2/ and B/Singapore/222/79 the average geometrical titres of antibodies were low: 7.58 and 10.03 respectively (table 1).

The investigation of all 206 nasal smears by applying chicken allowed the isolation of 23 strains of IV. Three of them were typed positively with antiserum against subtype A/H3N2/ and 20 — with antiserum against subtype A/H1N1/.

Additional details gave the coefficients of antigenic relation of the wide typing of the strains by reaction delayed haemagglutination with different standard antisera. Two of the strains A/H3N2/ shew coefficient of antigenic relation with antiserum A/Texas/1/77 — 1/8 and 1/16 (one only). The coefficients of antigenic relation with standard A/Bangkok/1/79 were from 1/4 to 1. Therefore, the strains were more closely related to variant A/Bangkok/1/79.

From all 20 isolated strains A/H1N1/ 20 % shew a coefficient of antigen relation under 1/8 with antiserum towards the standard A/USSR/90/77 against 60 %

Table 2

Results of serological investigations by reaction delayed haagglutination in percent of the subjects with low titres of antibodies

Strain used as antigen	Percent of subjects
A/USSR/90/77/H1N1/	35.43
A/Brasil/11/78/H1N1/	32.52
A/Texas/1/77/H3N2/	15.04
A/Bangkok/1/79/H3N2/	9.22

against A/Brasil/11/78. Coefficient 1/8 towards standard A/USSR/90/77 was registered with 25 % against 20 % towards standard A/Brasil/11/78. Coefficient of antigenic relation 1/4 was registered with 55 % of the strains with standard A/USSR/90/77 against 20 % towards A/Brasil/11/78.

The biologic peculiarities of the strains were characterized by certain features. They were isolated relatively easily; the bigger part of them even after the first infection of embryos and first passage. At the beginning the agglutination titres were lower but later became higher with the following passages. Relatively low inhibition-sensitiveness was registered when studied with normal sera from horses, guinea pigs or cocks. An exception was only the strains A/H3N2/ whose inhibition-sensitiveness was higher.

Conclusions

1) After investigation of 206 nasal smears were isolated 23 strains IV, 20 of which were related to subtype A/H1N1/ and 3 — to subtype A/H3N2/.

2) The average geometrical titres of antihaemagglutinins towards the variants of subtype A/H3N2/ shew relatively higher values which suggested more or less a stable immunological background at the beginning of epidemics among these collectives. This explained the poor circulation of subtype A/H3N2/ at the beginning of the wave and the prevailing role of variants of subtype A/H1N1/ towards which the percent of subjects with lower titres of antibodies was considerably increased.

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**ГРИПОЗНЫЕ ВИРУСЫ, ИЗОЛИРОВАННЫЕ У КЛИНИЧЕСКИ
ЗДОРОВЫХ ДЕТЕЙ В НАЧАЛЕ ГРИППОЗНОЙ
ЭПИДЕМИИ 1983 ГОДА**

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Р Е З Ю М Е

Исследовано 206 клинически здоровых детей в возрасте от трех до десяти лет, находившихся в контакте с больными гриппом в начале гриппозной эпидемии 1983 года.

При исследовании изолировано 23 штамма гриппозного вируса. Три из них относятся к подтипу А (Н3 3) и двадцать — к подтипу А (Н1 1). Изучены некоторые биологические свойства этих штаммов. С целью уточнения иммунологического фона начавшейся гриппозной эпидемии в этом коллективе, проведено исследование единичных сывороточных проб, взятых у этих детей. Пробы исследовались по РЗХА.