ETIOLOGICAL AND EPIDEMIOLOGICAL INVESTIGATIONS OF INFLUENZA IN VARNA AND VARNA DISTRICT DURING THE EPIDEMIC WAVE IN 1974—1975

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Profound etiological characteristics of the influenza epidemics in Varna District during the period of 1974—75 was studied by using complex epidemiological, virological, serological and immunofluorescent methods. Patients of different age and clinical symptoms were under our study. One of the most important reasons for the development of any influenza epidemic wave is usually the periodically established changing of the antigen and other biological properties of the influenza virus (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11). Therefore, the complex study of any influenza epidemics is a very important and obligatory task of all scientific investigators and physicians from the practical medicine.

Materials and methods

Our study covers the investigation of 800 patients with influenza and influenza-like diseases. All ambulatory, stationary and contact objects and patients were under our study, accepted to the clinics of the Higher Institute of Medicine, Varna city, as well as those treated at their homes. The materials were taken out of epidemiological places, schools, working staffs, military staffs, etc. The routine virological methods were applied for identification of the influenza and other virological agents. Reaction delayed haemagglutination (RDHA) and virus-neutralizing reaction (VNR) were used for the identification of the viruses. The former reaction was performed by chicken and rat immune sera. The antigen structure of the isolated viruses was established by applying a cross RDHA. The haemagglutination activity was determined by RHA with 1% suspension of 12 different types animal erythrocytes. The immunofluorescent studies were performed after the direct method.

Results and discussions

The epidemic wave in Varna District began during the first $^1/_3$ of December 1974 and its duration was 44 days altogether. The peak of the epidemic wave was registered in the third week of the beginning. In comparison with the former epidemic wave during 1972—73 the number of the affected patients was 21,684 to 23,128 at the present. The epidemic process affected first of all the adults, then the children up to 1 year and later the rest children up to 4—7 years. The highest percent of morbidity was registered in the group up to 1 year and in the age group up to 4—7 years; lowest percent was registered in the school age (8—18 years). When compared to the former epidemiological wave (1972—73) the morbidity of all age groups was less, 1.5—2 times. The clinical features of the majority of cases was a very typical finding for any influenza infection. The heaviness of the epidemic wave and processes was read after the lethality and complications during the epidemics. During the present wave a total number of 40 patients died, while 937 patients devel-

oped complications, compared to only 666 from the last epidemics. The morbidity of the rural population was 3 times less than that of the citizens.

As a result of the virological investigations of the 800 patients a total of 160 influenza strains, type A, were isolated. In comparison with the former epidemic waves, caused by influenza virus, type A, isolated during 1969/1974, the present strains were also adapted and isolated on a model of chicken embryos only after the first 1—2 passages. They shew relatively high and stable haemagglutination properties towards human, chicken and various animal erythrocytes after an interaction of 1—18 hours at 4° C and 18° C. These strains agglutinated in high titres human, hen, swine, rabbit, guinea pig erythrocytes, in moderate titres — sheep, veal, bovine erythrocytes, in low titres — mice, cat, dog, pigeon erythrocytes, while they could not agglutinate at all rat erythrocytes.

The viruses isolated during the present epidemics, similar to the influenza viruses, type A, isolated during the period 1970—74, demonstrated moderate inhibitor-sensitive properties towards nonspecific inhibitors, present in the applied animal and human sera. A reliable difference between RDHA after 2 and 24 hours contact between the used sera at room temperature and 4° C was not established.

The studied viral strains of influenza, type A, Varna-75, shew a considerable difference concerning their antigenic structure when compared to the labelled and local Varna strains, type A, isolated in 1968/69, as well as a total antigen similarity with the labelled strain A/HK/5/72, A/England 42/72 and specially the epidemic strain A Port Chalmers/73. Part of the studied Varna strains A/75 were neutralized by antisera against the international strain A/HK/1/68, A/HK/5/72, showing their attribution to the cited variant (A/Vn/189/74, A/Vn/108/74, A/Vn/186/74, A/Vn/224/75, A/Vn/225/75, etc.). Almost all investigated viruses shew high coefficients of antigen similarity with the international strain A/England/42/72 and even more with the international strain A/PCh/73, being neutralized by the immune serum of the same strain with a coefficient of neutralization 1—2.

The immunofluorescent studies of 100 materials taken of ill and dead patients revealed out an etiological agent in 36% the influenza virus, type A, as well as in 12% the adenoviruses.

Being serologically investigated 364 double serum specimens of patients with influenza and acute respiratory diseases during the period December 1974 — February 1975 shew the etiological role of influenza viruses A/HK, A/England/42/72, and A/PCh/73 in 16.2—26.7%. The same viruses (strains) prove their etiological importance in 34.7—41.6% of the cases in January, when the peak of the epidemic wave was registered.

When applied the Soviet and Bulgarian divaccine A and B and monovaccine A (to 179 objects) shew a four-time increase of the antibodies towards influenza viruses A/HK/68, A/England/42/72 and A/PCh/73 in 15.78—30.33%.

Conclusions

1. The studied epidemic wave in Varna District was less intensive, heavier, with more complications and lethality, compared to the past waves.

The coincidence of the epidemic period with the holidays of the school-pupils was the reason for a lower morbidity in this age group.

2. 160 strains influenza viruses, type A, were isolated on a model chicken embryos as a result of the virological investigations. They manifested high, various and stable haemagglutionation towards different animal erythrocytes and an expressed inhibitor-sensitive activity towards nonspecific inhibitors, present in the single animal sera.

3. Due to their antigenic characteristics almost any of the strain shew a more distant antigenic similarity with the labelled strain A/HK/68 and quite similar antigenic structure with A/HK/5/72 and A/England/42/72 and specially with the international epidemic strain A/PCh/73/4.

4. By applying immunofluorescent and serological investigations in 34.7—41.6% of the cases was established the etiological role of the influenza viruses A/HK/68, A/England/42/72 and A/PCh/73.

5. By testing the immunogenetic activity of the applied Soviet and Bulgarian influenza vaccine during the epidemic period an immune response and a 4-time increase of the antibodies towards antigens of A/HK/68, A/England/42/72 and A/PCh/73 was established.

REFERENCES

1. Александрова, Г. И. и др. Проблемы гриппа и вирусных ОРЗ, Сборник трудов ВНИИГриппа, Л., 1973, 5, 65—81. — 2. Бароян, О. В. Очерки по мировому распространению заразных болезней человека. М., 1967, 136—150. — 3. Голубев, Д. Б., Н. Н. Соколов. Проблемы гриппа и вирусных ОРЗ. Сборник трудов ВНИИГриппа. Л., 1971, 3, 98—112. — 4. Зыков, М. И. Проблемы гриппа и вирусных ОРЗ. Сборник трудов ВНИИГриппа. Л., 1973, 6, 5—16. — 5. Капрелян, Г., С. Антонова, Л. Димитрова. *Епидем. микробиол. инфекц. болести.* С., 1974, 2, 117—125. — 6. Николова, З., Р. Коцева. *Проблеми на заразните и паразитните болести.* С., 1971, 1, 15—20. — 7. Николова, З., Дисерт. д. м. н. С., 1971. — 8. Капрелян, Г., *Епидем. микробиол. инфекц. болести.* С., 1973, 1, 15—20. — 9. Ритова, В. В. и др. *Вопросы вирусологии.* 1975, 1, 25—30. — 10. Ровнова, З. И. и др. *Вопросы вирусологии.* 1975, 2, 210—215. — 11. Смородинцев, А. А., Г. И. Александров, Г. П. Желева. Механизмы противогриппозного иммунитета. Сборник трудов ВНИИГриппа. Л., 1972, 175—188.

ЭПИДЕМИОЛОГИЧЕСКИЕ И ЭТИОЛОГИЧЕСКИЕ ИССЛЕДОВАНИЯ ГРИППА ВО ВРЕМЯ ЭПИДЕМИИ 1974—75 В ВАРНЕ И РАЙОНЕ

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РЕЗЮМЕ

Авторами сделана этиологическая характеристика гриппной эпидемии, разразившейся в 1974—1975 г. г. в Варненском округе. Исследование проводилось с помощью эпидемиологических, вирусологических, серологических и иммунофлюорисцентных методов. Было обследовано 800 заболевших гриппом и гриппоподобными заболеваниями. Исследование охватывает как амбулаторно больных, так и стационарно больных из клиник Варненского медицинского института.

Устанавливается, что изучаемая авторами эпидемия была менее интенсивна, протекала тяжелее и дала больше осложнений и большее чисто смертельных случаев.