ROLE OF DIFFERENT PROVOKING FACTORS FOR THE COURSE OF HERPETIC DISEASES AND THEIR SEASONAL PATTERNS

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Herpes virus-induced infections are widespread in various geographic regions of the world (4). It is established that primary herpes infection caused by herpes simplex virus (HSV-1) is realized predominantly in early childhood while that caused by herpes simplex virus (HSV-2) appears later on when starting sexual contacts. In most people primary herpes infection turns into latent one (11) and can be reactivated by a series of provoking agents such as febrile state, nervous stress, menstruation, solar irradiation, alchohol consumption, etc. There are data reported in the literature available about the influence and role of these factors for latent herpes infection reactivation (8, 10, 11). When provoking factors are absent reactivation process is determined as spontaneous (12).

In the present communication the results from our study of the role of sirgle provoking factors for the course of herpetic diseases at different age groups and of their percentage distribution according to seasons are summarized.

Material and methods

Our investigations were performed according to the representative-cluster two-stage approach. Excerpt volume (contingent for examination) was estimated according to the formula:

$$n = \frac{t^2 \, q \, 10^2}{p \, (\Delta\,\%)^2} \times (1 + \sigma(\hat{n} - 1)) \quad \text{(after 5), where:}$$

n — a necessary number of persons for examination,
t — guarantee multiplier
p — percentage of persons who responded positively
q — percentage of persons who responded negatively
σ — coefficient of intrinsic-cluster correlation
Δ — relatively maximal representative error
$\hat{n}$ — average number of persons from one and the same place for performing of inquiry examination.

A representative totality (contingent) of 7428 persons was formed according to the method described above concerning the population of Varna and Tolbuhin districts. These individuals were divided in groups according to sex and age. Of them, a total of 2825 persons reported data aboutia herpetic diseased Comparison of data between different age groups and both sexes was carriey out by means of the alternative analysis. Statistical reliability was proved b . t-criterion. Differences were considered statistically significant with $t \geq 1.96$

Results and discussion

It was established that the incidence of herpetic diseases in the districts of Varna and Tolbuhin as a total was 38.76 per cent. It was 35.39 per cent for labial herpes, 1.91 per cent for facial one and 1.24 per cent for genital one (1.2).

Data analysis about the role of different factors provoking the course of herpetic diseases indicates that nervous stress occupies the first place for the

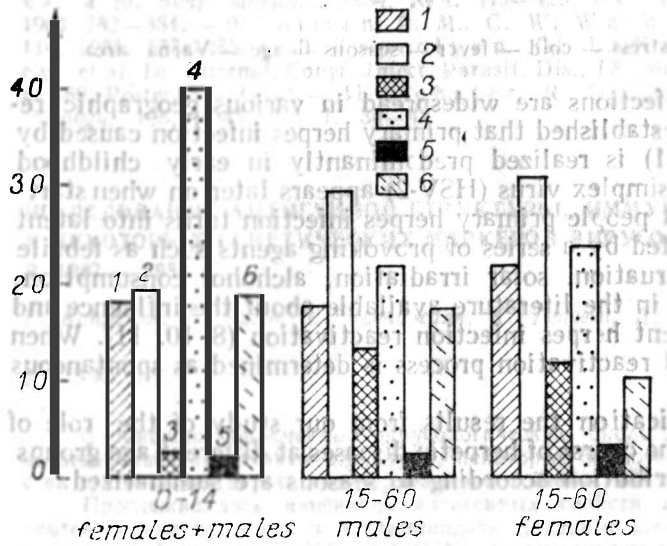

Fig. 1. Role os different provoking factors of the appearance of a herpetic disease.
1 — fever
2 — cold
3 — stress
4 — nervous stress
5 — others
6 — no responses

whole contingent — in 27.92 per cent of the cases followed by cold (in 26.25 per cent), febrile state (in 19.31 per cent), and tenseness (in 9.21 per cent). Relative share of the rest factors (injury, sexual intercourse, menstruation, solar irradiation, alcohol consumption) accounts for a total of 2.41 per cent of the cases. A total of 33.50 per cent of the persons with anamnestic data of a herpetic disease report the influence of more than one provoking factor while 14.49 per cent of the persons cannot identify such factors.

The great number of persons investigated enabled us to establish the inequal importance of these factors in single age groups. Nervous stress (in 39.83 per cent of the cases) is of greatest importance followed by cold (in 19.15 peri cent) and fever (in 17.86 per cent) in children up to 14 years of age (fig. 1). The role of cold and fever increases up to 29.88 per cent and 20.13 per cent, respectively in adults. However, the role of nervous stress decreases down to 22.73 per cent. The analysis of the inducing influence of these factors when narrower limits of the age groups are concerned demonstrates that cold occupies the first place.

(39.18 per cent) together with febrile state (37.79 per cent) in children up to 6 years while nervous stress, fright (9.06 per cent) and tenseness (1.41 per cent) are rather insignificant. The role of nervous stress is greatest in the age group between 7 and 18 years (varying between 32.72 and 43.60 per cent of the cases). The role of tenseness increases significantly in 15 — 18 years old adolescents

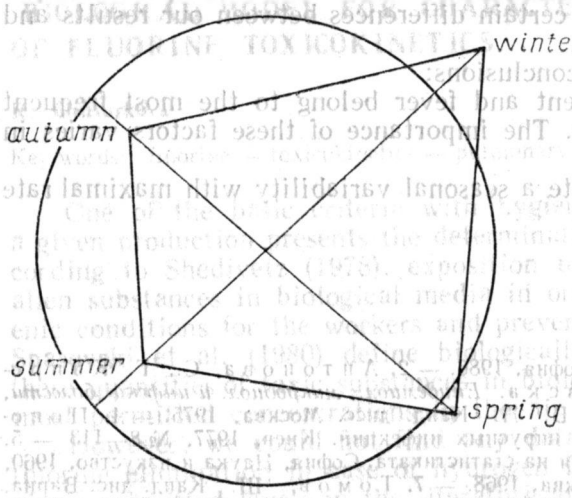

Fig. 2. Seasonal patterns of herpetic diseases.

up to 12.13 per cent of the cases. The latter percentage remains almost constant with insignificant variations throughout adult life.

A lot of authors report similar data. According to Tomov (1982) who has carried out a comprehensive investigation in the same area, febrile state occupy a leading position amidst provoking factors (in 52.71 per cent of the cases) followed by neuropsychic excitement (in 18.60 per cent) while menstruation comes third (in 15.89 per cent) and no provoking factors have been reported in 12.02 per cent of the persons. However, this author as well as Segal et al (1974) observe that menstruation plays a greater role for provoking of the illness — in 15 — 20 per cent of the cases while menstruation is a cause for relapse in only 1.2 per cent of our cases. Hatherley et al. (1980) report a similar result (about 3 per cent) concerning menstruation but at the same time these authors indicate the greater role of infectious diseases — in 38.0 per cent of the patients.

We can summarize that our investigation proves a definite dependence between age and provoking factors but not — between provoking factors and sex.

The question of seasonal patterns of herpetic diseases is closely related with the incluence of provoking factors. On fig. 2 one can see that herpetic diseases occur most frequently in winter (in 33.64 per cent of the cases) and in spring (in 27.57 per cent). They are more rarely in summer (in 18.73 per cent) and in-autumn (in 20.06 per cent). It seems probable that temperature and more precisely sharp temperature changes can be considered a main factor. The great importance of cold for provoking of herpetic relapses argues for this assumption. Our data obtained show that seasonal phenomena occur in herpetic diseases

although less expressed in comparison with these in respiratory and enteric ones. Maximal rate is reached in winter and minimal one in summer months. This observation corresponds to literature data available. Tkach (1968) and Grebenyuk (1975) report a prevalence of herpetic diseases during the period: autumn-winter-spring. Probably, climatic regional peculiarities of Varna area (long-lasting and mild autumn) determine a more seldom relapse of herpes simplex in autumn thus explaining certain differences between our results and those in the literature available.

We can draw the following conclusions:

1. Cold, neuropsychic excitement and fever belong to the most frequent factors provoking herpetic relapses. The importance of these factors varies in different age groups.

2. Herpetic diseases demonstrate a seasonal variability with maximal rate in winter-spring months.

REFERENCES

1. Антонова, С. Канд. дис. София, 1986. — 2. Антонова, С., Г. Капрелян, С. Дундаров, В. Гърдевска. *Епидемиол., микробиол. и инфекц. болести*, 1989 (под печат). — 3. Гребенюк, В. Н. Канд. дисс. Москва, 1975. — 4. Поволоцкий, Я. П. В: Эпидемиология вирусных инфекций. Киев, 1977, № 8—113. — 5. Стефанов, И., А. Тотев. Теория на статистиката. София, Наука и изкуство, 1960, с. 19. — 6. Ткач. Р. Канд. дисс. Москва, 1968. — 7. Томов, Ш. Канд. дис. Варна, 1982. — 8. Blyth, W. A., T. J. Hill, H. J. Field, D. A. Harboar, *J. Gen Virol.*, 33, 1976, 547—550. — 9. Hatherley, L. I., K. Hayes, E. M. Hennessy, I. Jack. *Med. J. Austral.*, 2, 1980, No 4, 205—208. — 10. Hill, T. J., W. A. Blyth. *Lancet*, 1976, 397—399. — 11. Klein, R. J. *Arch. Virol.*, 51, 1976, No 1, 1—13. — 12. Klein, R. J. *Arch. Virol.*, 72, 1982, 143—168. — 13. Segal, A., A. Katcher, V. Brightman, M. Miller. *J. Dental Res.*, 53, 1974, 797—803.

РОЛЬ РАЗЛИЧНЫХ ФАКТОРОВ, ПРОВОЦИРУЮЩИХ РАЗВИТИЕ ГЕРПЕСНЫХ ЗАБОЛЕВАНИЙ, И ИХ ЗАВИСИМОСТЬ ОТ ВРЕМЕНИ ГОДА

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РЕЗЮМЕ

В работе проведено исследование влияния отдельных факторов, вызывающих развитие герпесных заболеваний. Установлено, что наибольшее значение для рецидивирования герпесных заболеваний имеют нервный стресс — 27,92%, простуды — 26,25% и фебрильные состояния — 19,31%. Полученные результаты показывают неодинаковое значение индуцирующих факторов при провоцировании герпесных рецидивов для людей разного возраста. Установлена также вариабильност в зависимости от времени года при возникновении герпесных заболеваний с максимумом в зимние месяцы и минимумом в летние месецы.