

DEVIATIONS OF THE SEASONAL PREVALENCE OF BIRTHS IN THE GENERAL POPULATION AND AT CHILDREN WITH AUTISM

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Negative dynamics of births of Ukrainians is well-known in the last decades. In comparison with the 60th the quantity of births in 2000s decreased more than by 3 times. In the scientific and popular press there are statements of experts specifying the population, namely about the tendency to the *extinction* of Ukrainians, impossibility of the return to 52 million population which the country had on the independence threshold. The factors, capable to brake the birth rate, first of all are social and psychological instability in the country, the population impoverishment with a significant amount of the educated people understandably seeking to limit themselves to the birth of 1 or 2 children. And the last thing is not enough for the simple reproduction of the population.

The seasonal prevalence of births in 60–70s the Soviet Union as a whole and in Ukraine was rather monotonous: a sharp increase in January and a gradual essential decrease till December were noted. Always it was explained by spring shifts of the hormonal background of the population and the related success of conceptions in April and the next months i.e. these

phenomena relating to one of the signs of the natural selection are possible to refer to a certain confidence to the indicators of the population biological stability.

In this work the mathematical approaches were used in the laboratory of epigenetics (under the direction of A. M. Vayserman) of Institute of gerontology (Kiev). The distribution on the months of births of 32027318 people who were born in Ukraine for 1960–2009 was studied. The birth rate frequencies in each of ten-year cohorts were counted by means of a standard method of pseudo-cohorts designing. For every month of the birth the ratio of the observed frequencies of the birth rate to the expected ones was calculated. In the last two decades some shift was found in the optimum of births (according to the optimum of conceptions) for 6 months. In particular, the birth rate increase was displaced towards the summer-autumnal months i.e. one more sign of a dangerous tendency in the development of this population was found.

The obtained data were used when studying the birth rate of 658 mentally ill children. In particular, within a year the monthly analysis of the birth rate of children with the deviations in the mentality development (children's autism) also showed an existence of the *optimum* and *passimum* (the lowest level) of the births which are authentically different on the terms of manifestations from the seasonal fluctuations in the general population. However, it was not confirmed in relation to the children with the organic affection of the brain and cognitive disorders.

LABORATORY ESSENCE OF ADAPTIVE CHANGES ERYSIPELAS ON THE FACE



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KEYWORDS — biochemical passport, erysipelas, total protein, albumin, urea, creatinine, glucose, cholesterol, β -hemolytic streptococcus, thermogenesis, gluconeogenesis, dynamic enzymes performance, erythrocyte aggregation, protamine sulfate, lanthanum chloride, ADP, Willebrand factor, biochemical point of recovery, laboratory paradox erysipelas.

OBJECTIVE

Establish the nature of the metabolic (biochemical and hemocoagulation) changes in primary ery-

sipelas on the face from the standpoint of adaptation mechanisms.

METHODS

The study included 23 patients (15 women and 8 men) aged 31 to 78 years with a diagnosis of "erysipelas, with localization on the face, 2 severity. In 91% of cases of new-onset erysipelas. Patients were treated at the Infectious Diseases Hospital № 2 in Moscow. Average hospital stay was 4 ± 1.6 days. The study of biochemical substrates and enzymes in the blood, electrophoresis of serum proteins, the study of aggregation activity of erythrocytes and platelets, the study state plasma hemostasis (coagulation, fibrinogen level, antithrombin III, D-dimer) and von Willebrand factor were performed on admission at the beginning of the disease (1–3), the dynamics (4–6, 7–9) and in the recovery period (10–12) days of illness.

CONCLUSION

Hemorrhagic disorders in erysipelas faces correspond to the vasculitis-purple type of bleeding with laboratory evidence of DIC: disorders in erythrocyte link of hemostasis and damaging of the endothelium of blood vessels.

Pathogenicity factors β -hemolytic streptococcus group A (neuraminidase) can destroy the red blood cell membrane and start the process of disseminated intravascular coagulation (DIC). Laboratory paradox erysipelas — the discrepancy between high infectious fever and weak thermogenesis. Inhibition of mechanisms of thermogenesis (low AST in early disease) — a phenomenon erysipelas. Special factor of pathogenicity β -hemolytic streptococcus — the enzyme NAD-aza — causes total inhibition of bioenergy processes. On the background of high temperature is observed the low activity transaminases (AST, ALT) and enzymes of the cell membrane (alkaline phosphatase, CPK). Biochemical blood detoxicating barrier depressed. This is offset by increasing the load on the other detoxication mechanisms — red blood cells and albumin. We studied more than 50 different indicators of erysipelas. The simplest and most sensitive indicator of inflammation control was and remains the C-reactive protein.

When compared erysipelas on the face and the legs, we made sure that changes in the hemostasis system and in the biochemical indices in erysipelas on the face expressed less than on the legs. Laboratory starting point of the recovery (growth of ALT 3 times, growth of the transferrin 5 times) is the seventh day of illness.

EXTRAKTIONSUNTERSUCHUNG VON EINIGEN ANTIPSYCHOTISCHEN ARZNAISTOFFEN UND SCHLAFMITTELN

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Atypische Neuroleptika (Risperidon, Ziprasidon) werden häufig für die Behandlung von psychischen Erkrankungen verwendet, und sie sind die modernen Schlafmittel von dritten Generation (Zolpidem, Zaleplon), die für Schlaflosigkeit verwendet werden aber haben Toxizität. Es gibt schon geschriebene Fälle einschließlich Todesfälle von Vergiftung durch die genannten Arzneimittel. Die Ergebnisse der chemisch-toxikologischen Analysen sind von großer Bedeutung für den Nachweis einer Vergiftung. Aber die Verfahren zur Bestimmung dieser toxischen Substanzen in biologischen Medien sind nicht ganz genügend untersucht.

Wir haben Versuche zur Extraktion von Risperidon, Ziprasidon, Zolpidem und Zaleplon aus wässrigen

Lösungen durchgeführt. Diese Ergebnisse sind für die Extraktion und Reinigung dieser Substanzen bei der Untersuchung von biologischen Objekten genutzt werden.

Unter den organischen Lösungsmitteln, die üblicherweise in chemisch-toxikologischen Praxis verwendet werden, um toxische Hauptsubstanzen zu extrahieren, untersuchen wir Chloroform, Diethylether und n-Hexan. Um den pH-Wert der Lösung auszuwählen, in der Testsubstanzen in den maximalen und minimalen Mengen extrahiert sind, berechneten wir den Anteil von ionisierten (molekularen) und ionisierter (protonierter) Form der Substanzen bei verschiedenen pH-Werten unter Verwendung der Formel:

$$\alpha = 1/10^{pK_a - pH} + 1,$$

wobei α — der Anteil der nicht-ionisierten Form von Stoffen ist, pK_a — Ionisationskonstanten von Risperidon, Ziprasidon, Zolpidem und Zaleplon sind.

Die obengenannten Berechnungen zeigen, daß die Substanzen bei pH 9,0–10,0 hauptsächlich in