Tsimokh Ilona, Bogun M.V.

СOMPLEX GENETIC DISORDERS

Kharkiv National Medical University, Department of Foreign Languages, Kharkiv, Ukraine

Introduction.The problem of studying of genetic mechanisms of predisposition to diseases, inheritance of which does not fall under the Mendel’s rules and depend on the significant number of genes with additive effect (genetic component) and on the environmental factors (environmental component) is one of the least examined.

The actuality of the solution for this problem lies in the fact that on the modern stage multifactor diseases make 94% of all human diseases.

The aim of our research is to determine the influence of the environmental factors and genetic predisposition on diabetes mellitus development.

 Material and methods. The research method is data collection from the controlled group of 46 persons, among which were sick and healthy people of different ages. Data collection took several days.

The group under research consisted of mono- and dizygotic twins, 19 persons with genetic predisposition and influence of internal and external factors, 15 – with the influence of the factors but without genetic predisposition, 8 – with predisposition but without any influence of the factors.

 Results. The research has shown that the disease was manifested by the influence of various factors on people who had no genetic predisposition. But observing certain rules the group with a genetic predisposition has avoided the disease.

The conclusion. On the basis of the data, collected from this group the following conclusions were made:

1. the higher is susceptibility, the higher level of environmental factors is, because relatives have one and the same habitat;
2. risk for the relatives of proband depends on the relation degree: disease frequency decreases relatively the decrease of the relation degree;
3. internal factors (low-activity mode of life, improper feeding, susceptibility to overeating and obesity, intensity of pancreas function, taking medicines that influence on the carbohydrate metabolism: caffeine, adrenalin etc., previous infectious diseases: smallpox, German measles etc.) significantly intensify activity of genes with the additive effect;
4. availability of unfavorable external environmental factors (stresses, constantly changeable environmental conditions, professional load etc.) strongly influence in case of presence of genetic predisposition;
5. the disease was revealed in 5.2% of persons without genetic predisposition but with the influence of various factors;
6. concordance in monozygotic twins is manifested more than in dizygotic twins;
7. the higher the degree of severity in the relatives of proband, the more severe the disease appears;
8. under similar external factors the type II diabetes appears more quickly.

Determination of the influence of various factors on the development of multifactor disease is important for modern medicine to provide early and rational disease treatment and prophylaxis.

References

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