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Analysis of some of causes of congenital malformations of the face, jaws and teeth.

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ABSTRACT

The paper represents the material presenting the causes of occurrence of congenital abnormalities of the maxillofacial area as one of the most crucial issues in the dentistry. The methods of investigation of changes of congenital structures at the level of a gene or chromosome as well as exogenous effect of teratogens have been considered. The necessity of the health preservation and healthy life style of population as well as the necessity of elimination of exogenous effect of teratogens has been proved.

Keywords: congenital abnormalities, maxillofacial area, teratogens, pregnancy, general state of parents' health.

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INTRODUCTION

Congenital abnormalities of the face, jaws and teeth are a socially relevant disease affecting a significant part of the world population [1]. Despite the substantial development of the medical science and practice and appearance of a great number of methods of prevention, diagnostics and treatment the incidence of this disease is not reduced but on the contrary demonstrates the obvious tending to growth [2, 3].

Today the congenital abnormalities of the face, jaws and teeth are rather not rare severe diseases and represent if not the principle that one of the most serious issues of the maxillofacial surgery, orthodontic therapy and children prosthetics. Occupying the 2-3d position among all congenital human defects [4] the congenital defects of the maxillofacial area is met at the average in 0,5-2 cases per 1000 of newborns in different regions of the Russian Federation, at the same time in the Belgorod region according to the surveys from 1984 to 014 years these indicators were equal 0,75 cases per 1000 of newborns [1]. During the last 30 years the frequency of delivery of such children demonstrated the stable tendency to growing and increased by 1,5-2,5 depending on the territory of investigation of this problem [5]. The objective of this research was to find through investigation of the causes of occurrence of congenital abnormalities of the face, jaws and teeth the optimal evidence of the necessity of preventive measures and methods and ways of healthy lifestyle and preservation of the population health.

MAIN PART

On the basis of the long-term studies the congenital defect of the maxillofacial area among children and adolescents on the territory of the Belgorod region makes at the average 225-250 cases per the total number of children and adolescents (0-17 years) counting 290-310 thousand people [1-3]. It shall be noted that in the cities and the regional centers of the Belgorod region these figures are somewhat higher than among the country children and adolescents. This difference makes up to 5% and is increased on the territories of the industrial development.

Taking into account many years of surveys at the obstetrics facilities, health care centers and educational institutions of different areas of the Belgorod region we have accumulated experience in examination as well as identification of causes of occurrence of congenital abnormalities in more than 1000 children and adolescents. At the same time one show note the existing lack of relevant information determined by the fact that by investigation of the incidence of the facial, maxilla and teeth abnormalities the geo-information systems and technologies were almost not used which in this case would allow not only determining the prevalence of the congenital abnormalities but also finding the new correlations between the medical, environmental, geographic and other data and factors.

One of the fundamental causes of increase in the number of patients with the congenital defect of the maxillofacial area on the territory of the Belgorod region is, in our opinion, the increase in the number and intensity of exogenous teratogens and increase in the number of carriers of this congenital defect due to the developing diagnostics and medical rehabilitation of patients with this pathology [2, 10, 11].

By considering this problem it shall be explained that mutations that is changes of congenital structures at the level of a gene or a chromosome are one of the most frequent causes of maxilla-facial defects, at the same time the specific share of the chromosomal aberrations makes only 7-8% [6, 7]. The cause of mutagenesis may be both the external effect of physical factors such as ionizing (radiative) effect, environmental pollution and unfavorable environmental conditions, chemical factors (chemical mutagens), biological factors, for example, viruses and different failures of intracellular processes. Apart among the chemical mutagens we distinguish herbicides, insecticides, epoxides, ammonia products, benzenes, formaldehydes of different kind, fungicides, different food additives with anti-tumor action. Of great importance is also the biologic deficiency of the parental germinal cells as the result of unhealthy lifestyle (alcohol, drugs, smoking) as well as the level of the general health status of parents. The endocrine diseases of parents also play an important role in the occurrence of congenital defects of the maxillofacial area. These are, first of all, the thyroid diseases and diabetes mellitus [8]. The mechanical factors such as mother's injuries during the first months of pregnancy (crashes, falls, attempts of non-medical abortion. etc.) may also exert certain. The thermal factors such as hyperthermia both as the result of pathological processes and harmful labor conditions are also relevant to us [9]. Poor nutrition of a mother will also be a teratogenic factor

especially in cases of hypo- and hypervitaminosis. Teratogens such as poisons affecting the body of pregnant women also directly determine the occurrence of congenital defects of maxillofacial area, in first line they include alcohol, nicotine, heavy metal salts, organic substances in the form of benzo-phenols, etc. It may be concluded that the effect of teratogenic factors is first of all the issue of a healthy lifestyle and ecosystem of a human. Diseases such as biofactor – teratogen are especially dangerous in the form of rubella and toxoplasmosis and the probability of the congenital defect makes up to 20-30%. The issue of the teratogenic effect of the pharmaceutical substances taken during pregnancy period which first of all include chemotherapy agents, insulin, antihistamine and desensitizing agents, salicylates, etc. is also topical. As the result, we consider it to be necessary to divide the congenital defects into three etiologic groups: congenital, exogenous and multi-factor (appearing as the result of action of a set of factors including genetic and exogenous ones).

By considering the issues of prevention of the congenital defects of maxillofacial area we shall emphasize the necessity of health preservation and healthy lifestyle as well as elimination of exogenous effect of teratogenic factors. Therefore, the issue is not only medical but social as well. Prevention of occurrence of congenital defects of maxillofacial area within the medical context includes first of all, the medical genetic counselling and ultrasonic diagnostics. Besides, for the purposes of prenatal diagnostics one may perform amniotic fluid analysis, placenta biopsy, and biomedical measurements of the mother's blood.

SUMMARY

As the result of this research the regularities of distribution, occurrence and informativeness of congenital, external environmental, social and individual risk factors in the appearance of the maxillofacial defects were identified as well as their informative attributes were determined.

CONCLUSIONS

The analysis of some causes of occurrence of the congenital defects of the face, jaws and teeth will be one of the most challenging areas of work of the modern health professionals, dentists, orthodontists and other practicing physicians and will require further investigation both in terms of etiology itself and diagnostics, treatment, prevention and forecasting of this pathology.

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