

ISSN 2509-4327 (print)
ISSN 2510-4780 (online)

Inter
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Deutscher Wissenschaftsherold German Science Herald

№ 4/2017

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Impressum

Deutscher Wissenschaftsherold – German Science Herald
Wissenschaftliche Zeitschrift
Herausgeber:
InterGING
Sonnenbrink 20
31789 Hameln, Germany
Inhaber: Marina Kisiliuk
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Marina Kisiliuk
Korrektur:
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Gestaltung:
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Auflage: № 4/2017 (September) – 30
Redaktionsschluss September, 2017
Erscheint vierteljährlich
Editorial office: InterGING
Sonnenbrink 20
31789 Hameln, Germany
Tel.: + 49 51519191533
Fax.: + 49 5151 919 2560
Email: info@dwherold.de
Deutscher Wissenschaftsherold - German Science Herald is an international, German/English language, peer-reviewed, quarterly published journal.
№ 4/2017
Passed in press in September 2017
Druck: WIRMachenDRUCK GmbH
Mühlbachstr. 7
71522 Backnang
Deutschland

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INDEXING: Google Scholar, WorldCat, Index Copernicus, InfoBase Index, Journal Index, Citefactor, International Scientific Indexing, JIFACTOR, Scientific Indexing Services, International Institute of Organized Research.



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Scientific Indexing



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<http://miar.ub.edu/issn/2509-4327>

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RESEARCH OF CONTENT CORRELATION OF IMMUNOGLOBULINS AND LISOZYME IN ORAL FLUID OF CHILDREN WITH RAMPANT CARIES AGAINST THE BACKGROUND OF GASTRO-INTESTINAL DISEASES

Abstract. *The article presents the results of examination of children with rampant dental caries against the background of the gastrointestinal tract diseases. The average values of immunoglobulins A, G, secretory immunoglobulin A in oral fluid of the main, comparative and control groups were determined and the data were analyzed (with lysozyme indices content) in relation to the age of children. The results will be used to develop therapeutic and prophylactic program.*

Key words: *immune status, caries, gastrointestinal tract.*

Introduction. Any pathological process, and especially chronic, is always associated with indices of immunoreactivity of the organism as a whole or with the level of local immunity factors in the nidus of the disease. In diseases of the gastrointestinal tract (GIT), the level of immunoglobulins and lysozyme in the oral fluid deviates from the norm, which is likely to be a trigger for the development of rampant caries in children. A detailed study of this aspect makes it possible to directly influence the inhibition of the pathological process, which is important in the formulation of therapeutic tactics.

Objective. To determine the level of IgA, IgG, sIgA, lysozyme in children with rampant caries against the background of pathology of the gastrointestinal tract; to compare these data in infants with intact teeth against the background of GIT diseases and dentally and somatically healthy children.

Materials and methods. In order to study local resistance in rampant caries against the background of the gastrointestinal tract disorders, certain immunity factors in the oral fluid in children were investigated. The oral fluids were collected on an empty stomach by spitting into a measuring tube (1.5ml). The level of immunoglobulins A, G and sIgA in the oral fluid was determined by radial immunodiffusion in the agar by Mancini method. Monospecific standard antisera to the main classes of immunoglobulins were used in the reaction [1, 2, 3]. The lysozyme concentration in the oral fluid was studied by

diffusion method in the agar containing 0.05% *Micrococcus lysodeikticus* biomass powder.

For an objective assessment of the research results reliability, statistical processing of the obtained data was conducted by means of the commonly used methods of variation statistics using the package of statistical programs "Statgraphic 2.3" and "Microsoft Excel 2000" [4, 5].

Results of the research and their discussion.

The study of the immunological status of oral fluid in children of the study groups showed (Figure) that in dentally and somatically healthy children (control group) the IgA content in the oral fluid was on average 0.18 ± 0.03 g/l. In children with

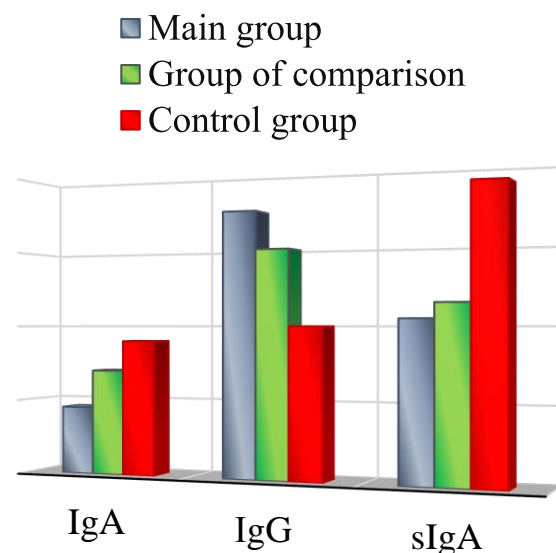


Figure – Average indices of immunoglobulins A, G, secretory immunoglobulin A content in the oral fluid in children of the study groups

intact teeth against the background of GIT disorders, IgA concentrations in the oral fluid were lower in relation to the control group data and equaled to 0.14 ± 0.02 g/l ($p > 0.05$). In children with rampant caries against the background of the GIT diseases the IgA level in the oral fluid was equal to 0.9 ± 0.03 g/l.

The lowest values of IgG concentration were detected in children of the control group (0.2 ± 0.04) g/l, and these data were lower than in children of the comparative group (0.3 ± 0.02) g/l ($p < 0.05$) and lower than those in children of the main group (0.35 ± 0.04) g/l ($p < 0.05$). The maximum values of secretory IgA in the oral fluid were observed in children of the control group (0.35 ± 0.02) g/l. In children with GI diseases sIgA concentration was significantly lower and equaled to 0.23 ± 0.03 g/l in persons with intact teeth and 0.21 ± 0.03 g/l in children with rampant caries ($p < 0.01$). In dentally and somatically healthy children of the control group the lysozyme concentration in the oral fluid was 23.1 ± 1.04 µg/l, that was higher than that in children with intact teeth of the comparative group (17.9 ± 1.08) µg/l ($p < 0.01$) and exceeded the data in children with rampant caries of the main group (15.28 ± 1.06) µg/l ($p < 0.01$).

The next stage of the work was to study the immunological state of oral fluid in children of study groups, depending on age. The concentration of secretory immunoglobulin A in the oral fluid in children with gastrointestinal diseases decreased with increasing age of the examined patients, however, in persons with rampant caries this process was more dynamic.

The decrease in lysozyme activity in the oral fluid with increasing age in children with GI diseases was studied. Thus, in children of the main group the lysozyme activity in the oral fluid decreased from 14.80 ± 1.13 µg/l in 6-9 year old children to 14.30 ± 1.10 µg/l in 10-12 year old children and equaled to 13.05 ± 1.10 µg/l in 13-15 year old adolescents. At the same time, in patients of comparative group the lysozyme activity in 6-9 year old children was 17.90 ± 1.09 µg/l, in 10-12 year old patients it was 17.05 ± 1.08 µg/l and in 13-15 year old adolescents it equaled to 15.50 ± 1.09

µg/l.

Conclusions. Thus, the results of the study of the immunological status in children with gastrointestinal tract diseases showed the decrease in the concentrations of sIgA and lysozyme in the oral fluid of the examined patients, indicating low bactericidal, antiviral and toxicogenic properties of the oral fluid; IgA deficiency can indicate the presence of allergic, autoimmune diseases; increased IgG synthesis is a response to a chronic infection or indicates an autoimmune disease. It was noticed that the given immunological imbalance was more pronounced in children with rampant caries than in persons with intact teeth against the background of the gastrointestinal diseases.

Prospects for further research. Based on the received data on the immunological status of oral fluid in children with rampant caries against the background of gastrointestinal diseases, the development of a treatment and prevention program is planned after consultation with immunologists. Therapy results will be reviewed after 6, 12 and 24 months from the start of treatment. This technique is expected to increase the level of local immunity in the oral cavity, thereby destroying favorable conditions for the development of pathogenic microflora and the progression of rampant caries.

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Deutscher Wissenschaftsherold German Science Herald

**Bibliographic information published by the Deutsche Nationalbibliothek
The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed
bibliographic data are available on the Internet at <http://dnb.dnb.de>**

**№ 4/2017 – 30
Passed in press in September 2017**



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