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- 13.00.00 Pedagogika fanlari
- 13.00.01 Pedagogika nazariyasi. Pedagogik ta'limotlar tarixi
- 13.00.02 Ta'lim va tarbiya nazariyasi va metodikasi (sohalar bo'yicha)
- 13.00.03 Maxsus pedagogika
- 13.00.04 Jismoniy tarbiya va sport mashg'ulotlari nazariyasi va metodikasi
- 13.00.05 Kasb-hunar ta'limi nazariyasi va metodikasi
- 13.00.06 Elektron ta'lim nazariyasi va metodikasi (ta'lim sohaları va bosqichlari bo'yicha)
- 13.00.07 Ta'limda menejment
- 13.00.08 Maktabgacha ta'lim va tarbiya nazariyasi va metodikasi
- 13.00.09 Ijtimoiy pedagogika
- 07.00.00 Tarix fanlari
- 19.00.00 Psixologiya fanlari
- 01.00.00 Fizika-matematika fanlari
- 02.00.00 Kimyo fanlari
- 03.00.00 Biologiya fanlari
- 09.00.00 Falsafa fanlari
- 10.00.00 Filologiya fanlari
- 11.00.00 Geografiya fanlari

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Pedagogika, psixologiya fanlariga ixtisoslashgan ilmiy jurnal



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TRAITS OF ORAL FLUID BIOCHEMISTRY AND PHYSICAL CHEMISTRY IN CHILDREN EXHIBITING ABNORMALITIES POST- URANOPLASTY

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Abstract: To compare the physicochemical and biochemical properties of oral fluid between a control group of healthy children and those exhibiting residual complications following uranoplasty for congenital cleft palate. The study included 50 age-matched healthy children and 109 children aged 6–12 years with congenital cleft palate and residual abnormalities after uranoplasty. Results and discussion: Significant physicochemical and biochemical alterations were identified in the saliva of children with congenital cleft palate and post-uranoplasty complications. These findings provide a basis for further research and for the development of methods aimed at improving the composition of oral fluid.

Key words: congenital cleft palate, postoperative palate deformity, salivation, gingivitis, intraoral fluid biochemistry.

Annotatsiya: Tug'ma tanglay yorig'i uchun uranoplastika amaliyotidan keyin qolgan asoratlarni kuzatilgan bolalar hamda sog'lom bolalardan iborat nazorat guruhi o'rtasida og'iz suyuqligining fizik-kimyoviy va biokimyoviy xususiyatlarini taqqoslash maqsad qilindi. Tadqiqotda bir xil yoshdagi 50 nafar sog'lom bola va yoshi 6–12 bo'lgan, tug'ma tanglay yorig'iga ega hamda uranoplastikadan keyin qoldiq anomaliyalari mavjud 109 nafar bola ishtirok etdi. Natijalar va muhokama: Tug'ma tanglay yorig'i va uranoplastikadan keyingi asoratlarga ega bolalarda so'lak tarkibida sezilarli fizik-kimyoviy va biokimyoviy o'zgarishlar aniqlandi. Olingan natijalar og'iz suyuqligi tarkibini yaxshilashga qaratilgan metodlarni ishlab chiqish va keyingi tadqiqotlar uchun asos bo'lib xizmat qiladi.

Kalit so'zlar: tug'ma tanglay yorig'i, operatsiyadan keyingi tanglay deformatsiyasi, so'lak ajralishi, gingivit, og'iz suyuqligi biokimyosi.

Аннотация: Целью исследования было сравнение физико-химических и биохимических свойств ротовой жидкости у группы здоровых детей и детей с остаточными осложнениями после уранопластики при врожденной расщелине нёба. В исследовании приняли участие 50 здоровых детей одного возраста и 109 детей в возрасте 6–12 лет с врожденной расщелиной нёба и остаточными аномалиями после уранопластики. Результаты и обсуждение: У детей с врожденной расщелиной нёба и послеоперационными осложнениями выявлены значительные физико-химические и биохимические изменения слюны. Полученные данные служат основой для дальнейших исследований и разработки методов, направленных на улучшение состава ротовой жидкости.

Ключевые слова: врожденная расщелина нёба, послеоперационная деформация нёба, слюноотделение, гингивит, биохимия ротовой жидкости.

INTRODUCTION

The examination of oral fluid composition in children with congenital cleft palate and residual defects following uranoplasty is primarily motivated by the presence of communication between the oral and nasal cavities, postoperative scar-related alterations, pathological bacterial contamination, dental crowding, and a high prevalence of dental caries and periodontal diseases.

LITERATURE REVIEW

Understanding the immune system and its functioning is becoming increasingly important. Chronic inflammatory periodontal diseases and associated systemic conditions significantly alter the biochemical and immunological status of the oral cavity [1–5]. The immunological properties of bioactive bodily fluids can be used to evaluate the type and dynamics of inflammatory responses, as well as responses to therapeutic interventions [6–11]. Despite extensive research, there is still limited knowledge regarding immune defense mechanisms in the oral cavities of children, particularly those with cleft palate [12–20].

Children with cleft palate face challenges due to the absence of a natural barrier between the nasal and oral cavities. In early childhood, these patients are at increased risk of unfavorable surgical outcomes due to higher susceptibility to somatic and dental abnormalities. Following primary uranoplasty, complications occur in approximately 18–30% of cases [23–24]. These complications are associated with congenital anatomical deficiencies, including the absence of native palatal tissue, weakening of muscle fibers, and impaired healing mechanisms. The most common complications include incomplete wound healing and palatal perforation. The primary objective of surgical correction is to restore the integrity of the velopharyngeal ring, which is essential for proper speech development in early childhood.

There is no universal consensus among maxillofacial surgeons regarding the optimal surgical approach for treating congenital cleft palate. Some specialists recommend single-stage uranoplasty at around two years of age, whereas others advocate a two-stage approach involving early restoration of the velopharyngeal ring followed by anterior palate reconstruction as the maxilla develops. Anterior palatal defects allow air and nasal secretions to enter the oral cavity, creating favorable conditions for colonization by pathogenic microorganisms. The absence of a natural barrier between the oral and nasal cavities reduces the remineralizing capacity of saliva, thereby increasing the risk of dental caries and periodontal diseases [1–3, 12, 23–24].

RESEARCH METHODOLOGY

Numerous studies highlight the critical role of cytokines in initiating inflammatory processes in periodontal tissues. The primary trigger for the cascade leading to the production of pro-inflammatory cytokines and activation of periodontal macrophages is pathogenic dental plaque [1–7, 10–20]. Pro-inflammatory cytokines (IL-1 β , IL-6, TNF- α) exacerbate inflammation and contribute to tissue damage, whereas anti-inflammatory cytokines (IL-4, IL-10) regulate and limit the inflammatory response. Changes in the cytokine composition of oral fluid significantly facilitate the diagnosis of inflammatory conditions [1–7, 10–20].

Saliva contains a complex mixture of immunoactive components, including lysozyme, immunoglobulins, antimicrobial peptides, and lactoferrin, which maintain oral mucosal immunity. Secretory immunoglobulin A (sIgA) is the most sensitive indicator of immune changes in the oral cavity. It exhibits high biological activity and performs multiple protective functions, including binding to bacterial cells and toxins to prevent their adhesion to mucosal surfaces, inhibiting viral penetration into the bloodstream, and regulating their interaction with mucosal cells.

Studies have shown a statistically significant decrease in salivary sIgA levels in children with severe dental caries and inflammatory periodontal diseases. Previous studies investigating sIgA levels in children with congenital cleft palate have demonstrated a consistent trend of decreased concentrations [1–3, 12]. However, in moderate chronic generalized periodontitis, sIgA levels may increase up to 1.5 times compared to control values, indicating variability in immune response. In contrast, in moderate and severe periodontitis, sIgA levels decrease by 1.5–3 times relative to the control group.

As the primary immunoglobulin in saliva, sIgA plays a crucial role in antimicrobial defense by aggregating pathogens and inhibiting their proliferation. Increased sIgA levels may reflect a compensatory immune response, whereas decreased levels in severe cases indicate impaired local immunity and imbalance between pro-inflammatory and anti-inflammatory mechanisms [1–3, 7, 12, 13, 17–19]. Understanding the anatomical communication between the nasal and oral cavities, along with the presence of pathogenic microflora and postoperative scar tissue, is essential, as these factors may significantly influence disease progression.

ANALYSIS AND RESULTS

This study delineates the results of an analysis of the oral fluid composition in 50 children of the same age who were predominantly healthy, alongside 109 children aged 6–12 with congenital cleft palate post-uranoplasty and persisting problems. The principal group encompasses diagnoses of nonsyndromal congenital cleft lip, alveolar process, soft and hard palate, conditions post-uranoplasty and cheilorhinoplasty (in instances of cleft lip), and the presence of a postoperative palate defect at least six months subsequent to uranoplasty. Parental or legal guardian consent to participate in the research was obtained, along with the absence of exacerbations of infectious or chronic disorders. The study included testing the pH of mixed saliva, viscosity (μ), and the unstimulated salivary flow rate (in milliliters per minute).

Findings of the study: The viscosity of saliva was measured at 1.06 ± 0.073 mm²/s in the control group and at 2.43 ± 0.137 mm²/s in children with congenital cleft palate and residual abnormalities. This shift indicates that saliva in the cleft group is less capable of effective mineralization and self-cleansing. The saliva of children with cleft palate had a pH of 6.47 ± 0.067 , while that of healthy children was 7.24 ± 0.058 . A lower pH in children with cleft palate reduces mineralization capacity and contributes to the development of dental caries



and periodontal disease. Children with congenital cleft palate and residual anomalies exhibited a salivation rate of 0.28 ± 0.039 ml/min, in contrast to 0.44 ± 0.054 ml/min observed in healthy children. The protein level (0.851 ± 0.535 g/L) in children with congenital cleft palate and residual abnormalities was lower than that in healthy children (1.68 ± 0.519 g/L). Adequate levels of calcium and phosphorus in saliva help maintain tooth integrity by preventing demineralization and ensuring a continuous supply of essential ions.

CONCLUSION

Infants with congenital cleft palate and persistent conditions post-uranoplasty exhibit abnormalities in the physicochemical and biochemical parameters of oral fluid. This study demonstrates that children with congenital cleft palate and residual abnormalities after uranoplasty experience significant alterations in the physicochemical and biochemical balance of oral fluid. Surgical scarring, changes in microbial colonization, and communication between the oral and nasal cavities weaken local defense mechanisms.

Our findings indicate several important differences between the oral environment of the study group and that of healthy controls: a significant increase in salivary viscosity (2.43 ± 0.137 mm²/s) and a decrease in salivary flow rate (0.28 ± 0.039 ml/min) suggest deterioration in the self-cleaning and lubricating functions of saliva.

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- 13.00.00 Pedagogika fanlari
 - 13.00.01 Pedagogika nazariyasi. Pedagogik ta'limotlar tarixi
 - 13.00.02 Ta'lim va tarbiya nazariyasi va metodikasi (sohalar bo'yicha)
 - 13.00.03 Maxsus pedagogika
 - 13.00.04 Jismoniy tarbiya va sport mashg'ulotlari nazariyasi va metodikasi
 - 13.00.05 Kasb-hunar ta'limi nazariyasi va metodikasi
 - 13.00.06 Elektron ta'lim nazariyasi va metodikasi (ta'lim sohaları va bosqichlari bo'yicha)
 - 13.00.07 Ta'limda menejment
 - 13.00.08 Maktabgacha ta'lim va tarbiya nazariyasi va metodikasi
 - 13.00.09 Ijtimoiy pedagogika
 - 07.00.00 Tarix fanlari
 - 19.00.00 Psixologiya fanlari
 - 01.00.00 Fizika-matematika fanlari
 - 02.00.00 Kimyo fanlari
 - 03.00.00 Biologiya fanlari
 - 09.00.00 Falsafa fanlari
 - 10.00.00 Filologiya fanlari
 - 11.00.00 Geografiya fanlari



MAKTABGACHA VA MAKTAB TA'LIMI

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