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ORTHODONTIC PATHOLOGY – A SIGNIFICANT PREDICTOR OF PERIODONTAL DISEASE IN CHILDREN AND ADOLESCENTSE

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Introduction. Periodontal diseases are an extremely pressing challenge in modern pediatric dentistry given their high prevalence in Ukraine and around the world. The leading local risk factors for gingivitis and periodontitis include microbial biofilm accumulation as a result of poor individual oral hygiene. The anomalies of the dental system play an essential role in the development of periodontal diseases.

Aim. Investigation of the impact of dental anomalies and deformities on the development of periodontal diseases in children and adolescents.

Materials and methods. 200 children and adolescents aged 12 to 17 were examined at the Dental Medical Centre of Bogomolets National Medical University. Periodontal status was diagnosed according to the modern AAP/EFP classification, and dental anomalies were diagnosed according to the classification systems of E. Angle and D. Kalvelis. The simplified Basic Periodontal Examination (sBPE) index was used to assess periodontal status. X-ray examination was performed for differential diagnosis. Statistical data processing was performed using the EZR (Easy R) statistical software.

Results. A high prevalence of gingivitis was found — 88.7% ($n = 177$) caused by dental biofilm in children and adolescents. Localized periodontitis was recorded in 7.5 % ($n = 15$) of cases. The proportion of children and adolescents with healthy periodontium was low — 3.8% ($n = 8$).

The results of the simplified Basic Periodontal Examination (sBPE) showed a twofold higher median number of healthy periodontal sextants in cases of gingivitis — 3 (2–4) — as compared to early-stage periodontitis — 1.5 (1–3), ($p = 0.01$). The median number of bleeding sextants in the case of gingival inflammation did not differ significantly from similar indicators in periodontitis: 2 (2–3) and 2.5 (2–3), respectively, $p > 0.05$. No significant differences in the median number of sextants with dental calculus in gingivitis and periodontitis were found: 1 (0–1) and 1 (0–1.5), respectively, $p > 0.05$.

The influence of dental anomalies on the development of periodontal diseases in children and adolescents was studied. The prevalence of dental anomalies was high — 74.6% ($n = 149$) in cases of gingivitis. According to Angle's classification, in the vast majority of cases, Class I malocclusion (neutral occlusion) was observed — 52.8% ($n = 106$). Distal occlusion (Class II) was diagnosed in 21.1% ($n = 42$) of the examined patients, and mesial occlusion (Class III) — in 0.7% ($n = 1$).

According to Kalvelis' classification, prognathism prevailed among the sagittal occlusion anomalies — 21.1% ($n = 42$). Progenia was diagnosed in only one case — 0.7% ($n = 1$). The prevalence of vertical anomalies, deep bite (overbite) and open bite, made up 18.3% ($n = 37$) and 1.4% ($n = 3$), respectively. Among dentition anomalies, crowding in the frontal region of the lower jaw was most frequently observed — 21.1% ($n = 42$). Anomalies in the position of individual teeth were recorded in 12.0% ($n = 24$) of cases.

In cases of localized periodontitis, the prevalence of dental anomalies in children and adolescents was also high — 75.0% ($n = 11$). Prognathism was diagnosed in 33.3% ($n = 5$) of the examined patients, deep bite — in 8.3% ($n = 1$), and crowding — in 33.3% ($n = 5$) of cases. The most common cause of periodontal attachment loss was crowded teeth in the lower anterior segment.

Conclusions. The high prevalence of dental anomalies in children and adolescents with gingivitis and periodontitis confirms their detrimental role in the development of periodontal diseases. The most unfavorable effects are caused by crowding of the lower anterior teeth, distal occlusion, and deep bite. Therefore, the priority for the prevention and treatment of periodontal diseases should be an interdisciplinary approach involving collaboration between an orthodontist and a pediatric dentist.

Keywords: *Gingivitis; Periodontitis; Risk factors; Pediatric patients; Prevention.*