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Selected salivary physio-chemical profiles in relation to oral health and growth status among celiac disease children

A Thesis

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Abstract

Background: Celiac disease is a chronic autoimmune disease caused by gluten ingestion in genetically predisposed individuals, negatively affects the small intestinal absorption and subsequently the entire human body wellbeing including oral health by dental enamel defects and saliva physical and chemical alterations. The aim of this study was to assess the relation between oral health condition and salivary oxidative stress in celiac disease children, disease activity and growth status.

Subjects, materials and methods: This study included 80 children aged 7-11 years, 40 children were considered as study groups in 2 separate groups, each consisted of 20 children: (1) celiac disease at diagnosis group and (2) celiac disease on gluten free diet group while 40 children devoid of the disease were included as control group. Dental caries experience and severity as decayed, missed, filled surfaces/teeth for primary and permanent teeth (d_{1-4}mfs/t and D_{1-4}MFS/T respectively) were diagnosed and recorded according to Muhlemann (1976), dental plaque and gingival health status were recorded (Silness and Leö, 1964; Löe and Sillness, 1963 respectively), dental enamel defects for study and control groups were recorded following the criteria of WHO (1997) while celiac disease dental enamel defects were examined and recorded for study groups according Aine (1986), oral aphthous ulcers history and presence were recorded according to Stanley (1972). Unstimulated saliva samples were collected to estimate saliva flow rate, pH, malondialdehyde by spectrophotometry and insulin like growth factor-I by Enzyme Linked Immunosorbent Assay (Elisa) method. All children were subjected to anthropometric measurements (body mass index and height for age) to assess growth patterns (WHO, 2008).

Results: Children were studied as one age group. According to Marsh classification of histopathological disease activity, The sample contained only Marsh II, III-a and III-b and there was neither Marsh I nor Marsh III-c while the duration of clinical symptoms before diagnosis was calculated by median value as 5 years either more or equal and less than it.

No caries free child was found in the sample. Concerning primary teeth, decay severity grade 4, decayed surfaces and decayed missed filled surfaces ($d_{4,}$ ds and dmfs) as well as decay severity grade 4, decayed surfaces and decayed missed filled teeth ($D_{4,}$ DS DMFT) in permanent teeth reported significant lower mean values in study than control groups. Plaque and gingival indices showed higher mean values in study groups with not significant and significant differences respectively.

Results revealed more children and teeth affected by dental enamel defects in study groups than in control. The most affected teeth in study and control groups were upper central incisors. According to Aine's classification, neither grade III nor grade IV was detected and the most predominant grade was Aine's I. The sample contained only one child came with minor aphthous ulcer at diagnosis and other child with a positive history of oral aphthae while the rest of the sample came with negative history and presence of oral aphthae.

Saliva flow rate mean values were lower in study than control groups significantly in contrast to saliva pH which showed not significant higher mean values in study groups. Saliva malondialdehyde mean values were significantly higher in study than control groups. Insulin like growth factor-I showed not significant lower mean values in study than control groups.

According to body mass index for age, children were all well nourished in celiac disease on gluten free diet and control groups, the

higher occurrence of malnourished children were found in celiac disease at diagnosis group.

Conclusion: It can be concluded that caries experience and severity were expressed at lesser extent in celiac disease children, interestingly with decrease in saliva flow rate. Gingivitis was not significantly experienced in celiac disease children and marked increase in salivary oxidative stress among them was observed while they suffered from chronic malnutrition (according to height for age) in CD at diagnosis group more predominantly.