Enamel defects and malocclusion in patients with celiac disease

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ABSTRACT

Background: This study investigated the types and severity of enamel defects and malocclusion in celiac patients compared to matching controls.
Materials and methods: One hundred and two celiac patients were included in the study they were attending the Gastroentrology and Hepatology Teaching Hospital.
Results: Enamel defects in the study group showed a highly significant difference than found in the control group in both deciduous and permanent teeth. Concerning malocclusion study group, a higher percentage of severe anomalies (code 2) than control group the difference was statistically highly significant.
Keywords: Enamel defects, celiac disease, malabsorption **(J Bagh Coll Dentistry 2005; 17(3): 98- 100)**

INTRODUCTION

Celiac disease (CD) also termed celiac sprue,, and glutin sensitivity enteropathy is characterized by small intestinal malabsorption of nutrients after ingestion of wheat gluten or related proteins from rye and barley prompt clinical and histologic improvement after adherence to strict gluten free diet and clinical relapse when gluten is reintroduced . [(1,2)]

Enamel hypoplasia has been reported in relation to various gastro-intestinal disturbances of infancy and childhood. [(3)]

Because permanent tooth enamel defects strongly associated with CD both in children and adults, the study was conducted in order to find whether these defects could be used to screen for CD among healthy persons with mild or abdominal symptoms, however we have controversial findings from review of studies relevant to this study, prevalence of malocclusion was not reported in CD. This study showed that there was a significant difference between study and control groups.

MATERAILS AND METHODS

The study included one hundred and two patients who attended the Gastroentrology and Hepatology Teacing Hospital compared to control group matching in age and sex. Age range 2-35 years old, these patients were diagnosed as having CD by GIT specialist and depending on clinical and histopathologic findings, clinical examination included, questionnaire and oral examination which included

Enamel opacities / hypoplasia which were recorded according to Modified Developmental Defects of Enamel Index (DDE), (WHO1997).[(4)]

Malocclusion The clinical examination starts with overall look at the subject general appearance, symmetry. The examination should then proceed with assessment of malocclusion. Malocclusion was diagnosed according to the criteria of (WHO, 1987). [(5)]

RESULTS

The results showed that normal enamel in deciduous teeth in study group was lower in percentage than control group (60.36%, 69.29).

Table (1) demonstrated that the percentage of enamel defects in deciduous teeth was higher in study group (71.43%) than that in control group (32. 14 %) the difference was statistically highly significant ($z=2.94, p<0,01$).

Enamel defects in permanent teeth were demonstrated in table (2) the percentage of enamel defects in permanent teeth in study group was higher than in control group (89.66%, 29.99%) respectively and it was statistically significant ($z= 8.03$, $p<0.001$).

Malocclusion: study group showed higher percentage of serious anomalies (code 2), 39.18% than that of control (12.16%) the difference was highly significant ($z= 3.76$, $p<0.001$) the results are detailed in table (3).

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DISCUSSION

Different indices or classification had been used in examining the enamel defect in celiac disease in all previous studies compared to relevant studies [6,7] , no enamel defect were found in the deciduous teeth in children with CD , Smith and Miller described a case report of a 6 years old boy suffered from CD and had enamel hypoplasia in his deciduous molars , the controversy could be attributed also beside the difference in index system to the delay in diagnosis of the case as celiac condition. [3]

By comparing the results of this study to the study of Attavasso [7] who concluded that 78% of the study group had enamel defect and 96% in Aine [8] and several case reports studies which concluded that there is no statistical differences concerning enamel defect between celiac patients and control. [3,6,9-11]

In Merzec–koronczewska study, [12] occlusal abnormalities were noted in one third of 38 celiac children with mixed teeth and the dental age as delayed in relation to calendar age. Since children with CD often lost weight and have a recorded rate of growth their dental development can be expected to be related dietary treatment had on effect on both dental and skeletal maturity. [8]

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Table 1: Enamel defects in deciduous teeth in both study and control groups by age and gender

Age	Gender	Study		Control		Sig
		No.	%	No	%	
2-5	M	5	71.43	1	14.29	S*
	F	7	87.50	3	37.50	S*
	T	12	80.00	4	26.67	S**
6-10	M	4	57.14	2	28.57	N.S
	F	4	66.67	3	50.00	N.S
	T	8	61.54	5	38.46	N.S
Total	M	9	64.29	3	21.43	S*
	F	11	78.57	6	42.86	N.S
	T	20	71.43	9	32.14	S**

Table 2: Enamel defects in permanent teeth in both study and control groups by age and gender.

Age		Study		Control		Sig
	Gender	No.	%	No.	%	N.S.
6-10	M	3	42.86	1	14.	N.S.
	F	4	66.67	3	50.00	N.S.
	T	7	53.85	4	30.77	S**
11-15	M	9	100.00	3	33.33	S***
	F	16	100.00	6	37.50	S***
	T	25	100.00	9	36.00	S***
16-21	M	8	100.00	1	12.50	S***
	F	5	100.00	0	.00	S**
	T	13	100.00	1	8.69	S***
22-30	M	6	85.71	1	14.29	S**
	F	12	100.00	5	41.67	S**
	T	18	94.74	6	31.58	S***
31-35	M	9	90.00	2	20.00	S**
	F	6	85.71	4	57.14	N.S.
	T	15	88.24	6	35.29	S**
Total	M	35	85.37	8	19.51	S***
	F	43	93.48	18	39.13	S***
	T	78	89.66	26	29.89	S***

Table 3: Malocclusion in study and control groups according to age and gender.

Age	Gender	Study						Control						Sig.		
		0		1		2		0		1		2		0	1	2
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%			
11-5	Male	2	22.2	3	33.3	4	44.4	5	55.5	4	44.4	0	0	N.S.	N.S.	S*
	Female	3	18.75	4	25.0	9	56.25	9	56.25	2	12.5	5	31.25	S*	N.S.	N.S.
	Total	5	20.0	7	28.0	13	52.0	14	56.0	6	24.0	5	20.0	S**	N.S.	S*
16-21	Male	1	12.5	1	12.5	6	75.0	4	50.0	3	37.5	1	12.5	N.S.	N.S.	S*
	Female	1	20.0	3	60.0	1	20.0	4	80.0	0	0	1	20.0	N.S.	N.S.	N.S.
	Total	2	15.4	4	53.8	7	53.8	8	61.5	3	23.1	2	15.4	S*	S*	S*
22-30	Male	3	42.8	2	28.6	2	28.6	4	57.1	3	42.9	0	0	N.S.	N.S.	N.S.
	Female	4	33.3	5	41.7	3	25.0	7	58.3	3	25.0	2	16.7	N.S.	N.S.	N.S.
	Total	7	36.8	7	36.8	5	26.3	11	57.9	6	31.6	2	10.5	N.S.	N.S.	N.S.
31-35	Male	5	40.0	3	30.0	3	30.0	6	60.0	4	40.0	0	0	N.S.	N.S.	N.S.
	Female	4	71.4	1	14.3	1	14.3	4	57.1	3	42.9	0	0	N.S.	N.S.	N.S.
	Total	9	52.9	4	23.5	4	23.5	10	58.2	7	41.2	0	0	N.S.	N.S.	S*
Total	Male	10	29.4	9	26.5	15	44.1	19	55.9	14	41.2	1	2.9	S*	N.S.	S***
	Female	13	32.5	13	32.5	14	35.0	24	60.0	8	20.0	8	20.0	S*	N.S.	N.S.
	Total	23	31.1	22	26.7	29	39.2	43	58.1	22	29.7	9	12.2	S***	N.S.	S***