

Prevalence of Oral Trichomoniasis in Dawn Syndrome Children with Gingivitis in Baghdad

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ABSTRACT

Trichomonas tenax is a parasite who's accountable to infect oral cavity. This work carried out to detected *Trichomonas tenax* infection in oral among 120 Dawn syndrome children of both sexes (age - range 6 - 14) years from Social Welfare Centers – AL -Raja institute in Baghdad. A total of 57 Dawn syndrome children (32 male and 25 female) with gingivitis disease was compare with 20 healthy children (control group). The samples of plaque and saliva were collected from each patient and immediately examined by wet mount smear and Giemsa staining for diagnosis of *Trichomonas tenax*. In infected group the percentage was 36.8% while in control group was 10%. Also, this study shown *Trichomonas tenax* in saliva was higher than in dental plaque in patients (57.8%, 33.3%) respectively. There was relationship between the presence of this parasite and several factors, such as age, gender, saliva PH, diabetic and heart disease, also consumption of antibiotic through last six months.

Keywords: Dawn syndrome, gingivitis, *Trichomonas tenax*, saliva, dental plaque.

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INTRODUCTION

One of the pathological forms of periodontal disease is the gingivitis, it is happening when dental plaque form along gum line and causes redness, inflammation, irritation with bleeding. Inflammation of gums usually caused by infection and secretions of microorganism like viruses, parasites, bacteria, and fungi (1). A highly incidence of *Trichomonas tenax* has been found, which is a widely known parasite found in patient with gingivitis or periodontitis caused by a bad oral hygiene (2). *Trichomonas tenax* is a protozoa commensal, infection received much less attention than other parasitic diseases. In the cases of a bad oral hygiene and poor periodontal health, it become from opportunistic pathogens and involved in the inflammatory process of gum disease. It may be found in the dental plaque, and periodontal area (3, 4). The interest of oral infection has been increased lately, is believe by aspiration from the oropharynx, the parasite enters the respiratory tract and then cause bronchopulmonary trichomoniasis (5, 6). Moreover, in a submaxillary gland infection (7), infra-auricular lymph node infection (8) and when in contact with target cells in vitro behave similarly to *Trichomonas vaginalis* by cause damage to various mammalian cells (9). The transmission is through droplet spray, kissing, saliva or use of contaminated dishes and drinking water (10). Recently, demonstrated the relation between the increase occurrence of this parasite and advanced periodontal disease, its incidence increased remarkably in Dawn syndrome (DS) patient with periodontal problem (11). The health of (DS) patient could be influenced because of this infection and real disorder in immune system of Dawn syndrome (12). In Iraq, there is no published article in this regard. Due to public health importance, the current study is aim to assessment the gingival health status and oral hygiene of children with Dawn syndrome and its correlation with some risk factors.

MATERIAL AND METHOD

Patients

This work was approved Ethics Committee of Social Welfare Centers – AL -Raja institute. fifty-seven Dawn

syndrome children (32 males and 25 females) with gingivitis that were selected from Social Welfare Centers - AL- Raja institute in Baghdad and 20 samples presented a healthy periodontium age between (6 -14 years old). A questionnaire was filled out with the personal information of each child this includes general health, sex, age, saliva PH, diabetic, heart disease and antibiotic for each patient.

Samples collection and parasitological examination

The dental plaque samples were collected by scraping the area with sterile swab with rubbed around the surface of teeth caries and gingival crevices then placed in sterile vial contain normal saline. Sample was examined with the wet-mount method and observed under a light microscope.

Limitation of saliva PH

Universal indicator strips (PH 0-14) were used for estimating the saliva PH of Dawn syndrome children.

Statistical analyses

The probability ($P < 0.05$) was calculated by using χ^2 (chi-square) test.

RESULTS

Among the samples 33 (37%) were positive for *Trichomonas tenax*, were taken from Dawn syndrome children with gingivitis. The microscopically screening of the samples a total 22 dental plaque samples (38.6%) were positive to *Trichomonas tenax* taken from (DS) with gingivitis. As for saliva samples, 32 (56.1 %) were positive for *Trichomonas tenax* in patients with gingivitis, however in control individuals it was found in 2 cases (10%) as (table1).

Table (2) shows higher *Trichomonas tenax* in male than in the female (40.6%, 32%) respectively, thus, a significant correlation between the existence this parasite and gender of the patients. According to the data shown in table (3), oral trichomoniasis was found in higher rate in age (13-14) year (50%). so, correlation between the age of patients and existence of parasite was statistically significant ($P < 0.05$). Table (4) showed saliva PH of the DS patients ranged from 5 to 7.5 whereas, *T. tenax* was in a higher rate in pH 7-7.5 (57.1%). It was correlation between saliva pH and existence of this parasite.

The risk factors were found in a higher rate in DS children with heart disease (60%), table (5) shows statistically

significant a correlation between existence of *Trichomonas tenax* and the risk factors of DS patients.

Table 1: Prevalence of *Trichomonas tenax* in saliva samples and dental plaque of patients.

Age Group	Examined children	Positive for <i>Trichomonas tenax</i>	
		No.	%
6-8	11	3	27.2
9-11	14	4	28.6
12-13	20	8	40.0
13-14	12	6	50.0
Total	57	21	36.8

Table 2: Detection the ratio of *Trichomonas tenax* according to patient's gender.

Clinical state	<i>Trichomonas tenax</i>			
	Dental plaque		saliva	
Gingivitis	No.	%	No.	%
	19	33.3	33	57.8
Control	1	5	4	20
Total	20	35	37	65

Table 3: Distribution of *Trichomonas tenax* according to the patient's Age

	Gender	Samples	<i>Trichomonas tenax</i>	
			No	%
Case group	Male	32	13	40.6
	Female	25	8	32
	Total	57	21	36.8
Control group	Male	10	1	10
	Female	10	1	10
	Total	20	2	10

Table 4: Detection the rate of *Trichomonas tenax* according to patient's salivary PH

Salivary PH	No. samples	<i>Trichomonas tenax</i>	
		No.	%
5- 5.5	12	1	8.3
6- 6.5	17	4	23.5
7- 7.5	28	16	57.1
Total	57	21	37.0

Table 5: The ratio of *Trichomonas tenax* according to risk factor

Risk factor	No. sample	<i>Trichomonas tenax</i>	
		No.	%
Diabetic	21	5	24
Heart disease	11	7	64
Antibiotic	25	9	36
Total	57	21	37

DISCUSSION

There are some records of the role of oral commensal in pathogenicity of gingivitis in Down syndrome children, in spite of the high happening of certain protozoan, like *Trichomonas tenax*. Our study exhibit gingivitis in Dawn syndrome patients was susceptible to parasite infection. In this study, prevalence of oral trichomonas was significantly higher than control group, that poor oral hygiene and irregular teeth of Down syndrome patient is the reason of periodontal disease. This also agrees with other studies such as (13,14). In the current study, the incidence of *Trichomonas* was more frequent within male gender, while female gender, the frequency was lower, these data are in agreement with this other study (15). The results obtained from the present study, significant correlation between age and existence of oral commensal, *Trichomonas tenax* is a higher in 13 - 14-year-old than in the lower age group, which conforms to previous reports (16, 17) who found that the frequency of infection increased with age. This case reason of a cumulative influence of plaque and calculus an with age (18). However, some were thinking that oral protozoa were rarely found in children (19). Regarding saliva PH, *Trichomonas* found in highest average pH 7-7.5 (57.1%), this result agreement with the finding of (20), which indicated the peak incidence of *Trichomonas tenax* in salivary patients occurred between 7-7.5. In addition, (21) suggest the high incidence of *Trichomonas tenax* in salivary sample exist between 6-6.5, whereas another study has not found a relation among presence of this protozoan and saliva PH. The results of our study presented that factors like diabetic, heart disease also antibiotic consumption increase the risk of gingivitis disease and there is statistically significance between existence *Trichomonas tenax* and these factors, this reason probably it was reduced in immunity of Down syndrome children.

CONCLUSION

Dawn syndrome could make the development periodontal inflammation; Therefore, Dawn syndrome patients was more infected *Trichomonas tenax* than healthy individuals. So, gingivitis could be a factor in the parasite's survival.

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