Prevalence of *Entamoeba gingivalis* and *Trichomonas tenax* among dental patients attending Federal School of Dental Technology and Therapy clinic, Enugu, Nigeria.

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Abstract: The prevalence of *Entamoeba gingivalis* and *Trichomonas tenax* among dental patients attending Federal School of Dental Technology and Therapy Dental Clinic Enugu between May and October 2009 was studied. A total of 120 oral swab samples were collected; 60 from dental patients and 60 from non-dental patients. Saline and eosin wet mounts were used to examine the oral swab samples and the organisms were subsequently identified using microscopy. Also, the oral environments of the patients were examined using dental instruments to determine the presence of oral deposits and dental diseases. The result of the study showed 66.7% oral protozoa prevalence among dental patients and 3.3% for non dental patients. The prevalence of *Entamoeba gingivalis* was 31.67% while that of *Trichomonas tenax* was 35%. The occurrence of *E. gingivalis* and *T. tenax* were more among patients within the age range 21-30. This work therefore emphasizes that *E. gingivalis* and *T. tenax* are associated more with individuals having dental diseases and that poor oral hygiene is a predisposing factor to its frequent colonization. Consistent dental health education should be encouraged especially among the youths.
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1. Introduction

Entamoeba gingivalis and *Trichomonas tenax* are protozoa usually found in oral cavity of humans (Sarowaska et al., 2004). *E. gingivalis* lives on the surface of the teeth and gum, gingival pockets near the base of the teeth and also seldomly in the crypts of the tonsils. The organism is abundant in cases of gum and tonsil diseases but no evidence show that they are involved in the etiology of these conditions (Robert and Janovy, 2000). They are usually spread by direct contact from one person to another by kissing, droplet spray or sharing eating utensils. It is known that up to 95% of individuals with unhygienic mouth may be infected with this amoeba (Pestechyan, 2002).

Trichomonas tenax is a small trichomonad that usually occur in the oral cavity of 5-10% of humans. Although considered non pathogenic anaerobic commensals, the harborage of this protozoa is most common among individuals with poor oral hygiene or dental diseases. However, it is also believed that the organism could enter the respiratory tract by aspiration from the orophaharynx and can result to bronchopulmonary trichomoniasis (Chiche et al., 2005; Mallat et al.,2004; Mahmoud and Rahman 2004). Transmission is usually direct by kissing or common use of eating or drinking utensils. *T tenax* are usually resistant to changes in temperature and could live for several hours in drinking water (Talaro and Talaro 2002; Brooks et al., 2007; Roberts and Janovy 2000; Hersh, 1985).

Whereas the exact correlation between the occurrence of oral protozoa and oral disease is yet to be established their high prevalence among periodontal patients has been reported (Ozumba et al., 2004; Vrablic et al., 1992). The exact association between these protozoa of public health importance and dental diseases is not yet fully ascertained in Eastern Nigeria. This study therefore aimed at determining the occurrence of *E. gingivalis* and *T. tenax* among dental patients in Enugu, Eastern Nigeria.

2. Materials and Methods

The study involved 120 individuals consisting of 60 dental patients (23 males and 37 females) attending the dental clinic of the Federal School of Dental Technology and Therapy, Enugu and 60 non-dental patients (control group). Oral swabs were aseptically collected from tooth surfaces and soft

tissues of all the participants. They were respectively examined using the wet mount technique using physiological saline and eosine stain. The prepared slides were examined using low dry objective. Morphological structure and movement were used to identify the organisms (Roberts and Janovy, 2000).

The patients' oral environment were also examined to determine the presence of oral deposits and diseases. Only non dental patients with fair oral health condition were involved in the control group. The consents of all the participants were duly obtained before the commencement of the work.

3. Results

The overall oral protozoal prevalence among the sixty dental patients was 66.7%, consisting of 19 (31.67%) *Entamoeba gingivalis* and 21 (35%) *Trichomonas tenax*. Out of the 60 patients examined males accounted for 30% occurrence while females were 36.7% (Tables 1 & 3). On the other hand, out of the 60 non dental patients studied, only 2 (3.3%) yielded oral protozoa comprising of *E. gingivalis* only (Table I). Patients within the age range 21-30 had the highest cases of both *E. gingivalis* and *T. tenax* (Table 2). Oral protozoa was also more prevalent among patients having calculus, plaque and dental caries (Table 4).

Table I: Prevalence of Oral Protozoa in the Mouths of the Participants.

Group	No examined	Oral protozoa infection	Total %	*E. gingivalis*	%	*T. tenax*	%
Dental Patients	60	40	66.7	19	31.67	21	35
Non dental patients	60	2	3.3	2	3.3	-	-
Total	120	42	35	21	17.5	21	17.5

Table 2: Prevalence of Oral Protozoa Among the Age Range of the Participant.

Group	Age	*E. gingivalis*	%	*T. tenax*	%	No affected
Dental patients	1-10	-	-	1	1.67	1
	11-20	4	6.67	5	8.33	6
	21-30	8	13.33	8	13.33	16
	31-40	4	6.67	1	1.67	5
	41-50	-	-	3	5.0	3
	51-60	2	3.33	2	3.33	4
	61-70	1	1.67	1	1.67	2
Total		19		21		40
Non Dental patients	1-10	-	-	-	-	-
	11-20	-	-	-	-	-
	21-30	2	3.33	-	-	2
Total			3.33	-	-	2

Table 3: Prevalence of Oral Protozoa among the Participants with respect to sex

Group	Gender	No examined	*E. gingivalis*	%	*T. tenax*	%	Total	%
Dental patients	Male	23	9	39.13	9	39.13	18	30
	Female	37	10	27.03	12	32.43	22	36.67
Non-dental patients	Male	23	0	0	0	0	0	0
	Female	37	2	5.41	0	0	2	3.33

Table 4: Occurrence of Oral Protozoa among Participants with various Oral Deposits, Diseases and other Oral Problem.

Type of oral problems	Specific oral problem	No examined	No with *T. tenax*	%	No with *E. gingivalis*	%	Total affected	% affected
Oral deposits	Calculus	59	14	23.7	15	25.4	29	49.2
	Plaque	120	21	17.5	21	17.5	42	35.0
	Stains	25	4	16.0	7	28.0	11	44.0
Oral diseases	Gingivitis	37	11	29.73	7	18.92	18	48.65
	Periodontitis	20	5	25.0	6	30.0	11	55.0
	Caries	49	12	24.49	11	22.45	23	46.94
	Halitosis	18	2	11.11	6	33.33	8	44.44
Other tissue disorders	Gingival recession	34	2	5.88	4	11.76	6	17.65
	Attrition	33	5	15.15	7	21.21	12	36.36
	Cervical abrasion	7	1	14.29	3	42.86	4	57.14
		12	-	-	7	58.33	7	58.33
		5	-	-	2	40.0	2	40.0

4. Discussion

This study indicated that individuals having dental diseases and problems are more prone to oral protozoa colonization. This was emphasized by the fact that while 66.7% of the dental patients had oral protozoa, only 3.3% of the non dental participants yielded oral protozoa upon microscopic examination. This is high compared with the 16.3% previously reported among dental patients attending the University of Nigeria teaching Hospital (UNTH) Enugu (Ozumba et al., 2004). Prevalence of 26.5% and 46% were reported respectively from periodontitis patients in previous studies (Wantland and Luer, 1970; Pestechyan, 2002). Also, 28% and 8.4% prevalence were reported among 300 patients in France and 143 patients in Iraq (Feki and Molet 1990; Mahdi and al-Saeed, 1993).The high occurrence observed in the present work could be attributable to the fact that most of the patients had oral deposits in addition to other tissue disorders and diseases. Other previous studies had similarly associated high oral protozoa harborage with individuals with poor oral hygiene and dental diseases (Talaro and Talaro, 2002; Ghabanchi et al., 2010).

The finding in this study showed 31.67% prevalence of *Entamoeba gingivalis* and 35% *Trichomonas tenax*. This is at variance with the report of Ozumba et al., (2004) which highlighted that *E gingivalis* is more common than *T. tenax* in Nigeria. The occurence rate of 11.3% and 4.9% respectively were reported for *E. gingivalis* and *T. tenax* among patients in UNTH Enugu, Nigeria (Ozumba et al., 2004). While the exact reason for this variation is not certain at the moment, employment of Polymerase Chain Reaction protocol (Athari et al., 2007) could produce better yield of the organisms. Further, in contrast to our finding, El Hayawan and Bayoumy (1992) isolated *E. gingivalis* from the oral cavity of periodontal disease patients particularly the females and could not isolate *T. tenax*. The difference could be attributable to the oral health conditions and age of the patients studied in the present work. However, their report that the prevalence was generally more common among the female patients is consistent with our finding in the present study.

Furthermore, our finding that patients within the age bracket 21-30 yielded the highest oral protozoa is in line with the report of Vrablic et al., (1992) which indicated that *T tenax* and *E. gingivalis* do not usually occur among the small children and the elderly. Cambon (1979) also reported that age, social status, dental conditions among others influences the presence of *T. tenax*. In their study also Chunge et al., 1998 reported a positive association between age and prevalence of oral protozoa.

While it is known that *E. gingivalis* and *T. tenax* are commensal protozoa commonly found in human oral cavity, it is most probable that they are opportunists especially in the lesions of gingivalis and periodontal pockets (Talaro and Talaro, 2002). The result of the present study corroborates earlier works that implicated poor state of oral hygiene to enhanced prevalence of oral protozoa (Ozumba et al. 2004; Chunge 1998;Wantland et al., 1970; Dao et al., 1983). Ghabanchi et al., (2010) reported that parasitic infections are relatively common among patients with periodontal diseases .

In conclusion, although the exact contribution of these protozoa organisms to dental diseases is not absolutely obvious, their predominance among persons of poor oral hygiene, probably underscores their correlation with dental diseases. This work therefore recommends intense oral hygiene education especially among dental patients to reduce the cases of parasitic infestation.

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