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JOURNAL OF UNIVERSITY OF BABYLON
For Pure and Applied Sciences (JUBPAS)

Vol.30; No.4.| 2022

Oral Parasites and its Associated with the Population Residency and Some Physiological Disorders among Population in Erbil City.

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Received:	29/7/2022	Accepted:	27/9/2022	Published:	31/12/2022

ABSTRACT

Background:

The parasitic infection may be caused by the parasites *Trichomonas tenax* and *Entamoeba gingivalis*, which were included in this investigation. This studys goal is to estimation the incidence the parasites in patients' oral cavities with associated of some factors like residency, dental caries and diabetics in Erbil, Iraq.

Materials and Methods:

The current study comprised 354 patients in total. A questionnaire recorded residency (urban and Rural), dental caries and diabetics. Calculi samples were taken by use of a sterile curette and were placed in sterile collection vials, each containing 1 ml of sterile normal saline solution. Saliva samples of the patients were collected in sterile vials, then dilution was done by addition of 1 ml of sterile saline solution to each vial. Then each vial was labeled by patient's number, name and date of collection. The purpose of collection the calculi and saliva to search about the parasites in the oral cavity.

Results:

The higher infection ratio of *E. gingivalis* in the rural regions in comparison with that of urban areas (91.7% and 89% respectively), and the results discovered that the higher positive rate of *E. gingivalis* (93.3%) was observed among those with dental caries and it was encountered in (86.8%) of subjects free from dental caries, regarding diabetes, diabetes and the presence of *E. gingivalis* were shown to have a statistically significant connection (97.1%) and (35.7%) infection rates of *E. gingivalis* among diabetics and non-diabetic participants respectively. While *T. tenax* was more common in individuals with non-diabetes (12.2%) compare to the diabetics (9.5%), but no relation was found.

Conclusion:

Infection with these parasites is relatively prevalent in people with dental caries, diabetics, and the persons' environment. It appears that continuation of advices are important in regulator of parasitic infection in Kurdistan Region of Iraq.

Key words:

Gingivitis, Trichomonax tenax, oral disease.

ISSN: 2312-8135 | Print ISSN: 1992-

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Vol.30; No.4.| 2022

الخلاصة

مقدمة:

تبين في هذا البحث أن الطفيليات التي تضمنتها الدراسة هي أميبا الفم *Entamoeba gingivalis* والمسوطة الفمية *Trichomonas tenax* ربما مسئولتان عن الاصابة بالطفيليات الفمية. الغرض من هذا الدراسة هي التحري عن الطفيليات الموجودة في تجويف الفم و علاقتها بمكان العيش (السكن)، تسوس الاسنان و داء السكري بين مراجعين في مراكز الاسنان في محافظة أربيل–العراق.

طرق العمل:

من مجموع 354 حالة التى تضمنتها هذا الدراسة. وكذلك الاستبيان سجلت السكن، تسوس الاسنان و مرض السكري. نموذج راسب الفم جمعت بواسطة أستعمال curette معقم ووضعت في أنبوبة جمع معقم، كل منها يحتوي على (1مل) من محلول Normal saline المعقم. و نموذج اللعاب وضعت في أنبوبة معقمة، ومن ثم تم تخفيفها بواسطة أضافة (1مل) من N.S. المعقم. كتابة و تدوين رقم المريض، أسم المريض و تاريخ جمع النموذج على كل أنبوبة.

الاستنتاجات:

النسبة العالية للاصابة بالمسوطة الفمية لدى المراجعين الذين يستوطنون أطراف المحافظة بالمقارنة مع المدينة (91.7% و 89%) على التوالي. أظهرت علاقة أحصائية معنوية لأميبا الفم E.g. (93.3 %) في فم الاشخاص الذين لديهم تسوس الاسنان و بالعكس، و(86.8 %) حالة في فم الذين ليس لديهم أي تسوس. وبخصوص مرض السكري أحصائيا هناك علاقة قوية بين الاشخاص المصابين بمرض السكري والاصابة باميبا الفم Entamoeba gingivalis (97.1%) و (35.7%) بين المصابين بالسكري والذين ليس لديهم المرض على التوالي. بينما المسوطة الفموية Trichomonas tenax شائع جدا بين الاشخاص الذين ليس لديهم مرض السكري (12.2%) مقارنة مع الذين لديهم المرض (9.5%), ولكن ليس هناك أي علاقة معنوية.

الكلمات المفتاحية:

التهاب اللثة، المسوطة الفمية، أمراض الفم

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INTRODUCTION

Human oral cavity is colonized by specific bacteria, protozoa, and fungi [1]. The oral cavity is frequently rather stable; nonetheless, some circumstances may result in significant oral conditions like periodontitis and caries because several oral commensal microbes may result illnesses if suitable circumstances are supplied [2]. Some authors measured *Entamoeba gingivalis* as pathogenic while other considered the parasite as commensal [3]. Molecular approaches have lately proven the importance of bacteria in human health and illness [4].

Trichomonas tenax is one members of family Trichomonadidae, is a parasite that habitat in the oral cavity of human and is anaerobic. Many analyses were conducted aiming at determining the frequently seen the parasite in those with chronic periodontitis, it discovered accuracy in individuals with poor dental hygiene and chronic periodontitis, it is worldwide distributed, ranging from 4% to 53% [5]. Most Trichomonas are parasitic or commensal flagellates that is living in low-oxygen environments [6].

Both parasite is cosmopolitan and are most usually found in people who have poor oral hygiene with periodontal disease advanced [7]. The evidence from previous researches about oral protozoa are likewise restricted in some countries.

Materials and Methods

- **Subjects**

  The current study included 354 individuals, were enrolled over a 3-month period, January to March 2022, we have also visited the College of Dentistry's dental care facilities and Xanzad Learning Center and also individuals from the Private Clinic in Erbil–Kurdistan region of Iraq, for founding the incidence of oral protozoa *E. gingivalis* and *T. tenax* in relation with residency, dental caries and diabetes among the participants. Information questionnaire form was collected from each patient.

  The patients' fully informed permission was obtained. The people were chosen and tested to ensure that they met the requirements for dental caries and diabetes illness. Wet preparations are typically made from mouth scrapings [8]. Then direct examination for each slide was done by use of 400X magnification of light microscope for detection of the oral protozoans. The movement and morphological structure of the parasites were used for purpose of identify [9].

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Results and Discussion

Residency

Statistically, insignificant relationship was present between both oral protozoa and residency and the findings of this study are shown in the Tables (1 and 2) respectively considering the greater infection incidence of *E. gingivalis* in rural locations in compared with that of urban regions (91.7% and 89% respectively). This can be explained by the poor socioeconomic position of the patients in these circumstances, poor hygiene, and a lack of access to public health facilities.

These findings are consistent with the findings of [10] JiaYan et al. in Tangshan, China, who stated that gingival amoebic infection was not associated with urban/rural residency. On the contrary, regarding *T. tenax*, the lower infection rate was among rural population in comparison with that of urban inhabitants (6.5% and 11.4% respectively). The current study's findings might be attributed to the involved low condition of oral hygiene, which increased the incidence of oral protozoa [11, 12,13].

Table (1) *Entamoeba gingivalis* prevalence based on the patients' residence

Residency	*Entamoeba gingivalis*		
	No. examined	**No. +ve (%)**	**No. –ve (%)**
Urban	246	219 (89)	27 (11)
Rural	108	99 (91.7)	9 (8.3)
Total	**354**	**318** (89.8)	**89.8**

P value= 0.291

Table (2) Prevalence of *Trichomonas tenax* according to the residency of the patients

Residency	*Trichomonas tenax*		
	No. examined	**No. +ve**	**%**
Urban	246	28 (11.4)	218 (88.6)
Rural	108	7 (6.5)	101 (93.5)
Total	**354**	**35 (9.9)**	**319 (90.1)**

P value=0.107

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Dental caries

Regarding oral diseases, the study explores statistically significant relationship between dental caries and both oral protozoans, and the findings demonstrated that the higher positive rate of *E. gingivalis* (93.3%) was noticed among those with dental caries and it was encountered in 86.8% of subjects free from dental caries Table (3). While *T. tenax* infections were found to be positive in ninteen (11.5%) specimens from 165 patients with dental caries and in sixteen (8.5%) specimens from 189 healthy controls Table (4).

These findings are at variance with the studies of several investigators in the world like: in Kirkuk, [14] greatest percentage of both *E. gingivalis* and patients who had *T. tenax* with dental caries (29.62% and 25.92% respectively) but no infection was observed among those with no clinical signs, in Babylon, out of 59 specimens with dental caries, 22 cases were positive, and the highest rate of *T. tenax* was among the patients who suffered from dental caries (37.2%), but the rate of infection in the patient who have not shown any pathological conditions was (3%) in Al-Hilla city [15]. The [16] in Turkey, highlighted that dental caries was not found to be statistically significantly related with the presence of oral protozoa, [13] in Nigeria, observed 22.45% and 24.49%rates of infection with *E. gingivalis* and *T. tenax* respectively among patients with dental caries.

The differences in the research outcomes might be attributed to oral health issues.

Table (3) Occurrence of *Entamoeba gingivalis* among participants with Dental caries

Oral disease	*Entamoeba gingivalis*		
	No. examined	**No. +ve %**	No. -ve %
Dental caries	165	154 (93.3)	11 (6.7)
Healthy mouth	189	164 (86.8)	25 (13.2)
Total	354	318 (89.8)	36 (10.2)

Pvalue=0.03

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Table (4) Occurrence of *Trichomonas tenax* among participants with dental caries

Oral disease	*Trichomonas tenax*		
	No. examined	No. +ve %	No. -ve %
Dental caries	165	19 (11.5)	146 (88.5)
Healthy mouth	189	16 (8.5)	173 (91.5)
Total	354	35 (9.9)	319 (90.1)

P value=0.2171

Diabetes

Regarding diabetes, there is a statistically significant link between diabetes prevalence and *E. gingivalis* prevalence. Table (5) showed 97.1% and 35.7% infection rates of *E. gingivalis* among diabetics and non-diabetic participitants respectively. This finding is disagreement with that of Chomicz et al. (2004) in Poland, who recorded that the frequency of parasitic protozoans, *T. tenax* and *E. gingivalis*, was higher in the control individual than in the diabetics (26.6% and 13.3%, respectively), and concluded it may be because metabolic illness that causes serious disturbances for multi-organ in addition to insulin therapy are the very important factors varying oral cavity ecology for people with diabetes and favor infections with other microorganisms. Diabetes is a significant metabolic condition that cause systemic problem that are also noticeable in the oral cavity [18]. While *T. tenax* was more common in individuals with non-diabetes (12.2%) compare to the diabetics (9.5%), but no relation was found as shown in Table (6).

There are contradicting reports in the literatures regarding diabetes: one study reports a high incidence of these commensals (74%) in adult diabetics [19] and another study reports a low incidence [20]. While other researchers stated that oral protozoa and diabetes were not shown to be significantly associated like: [21] in France, [22] in Turkey.

Table (5) Distribution of *Entamoeba gingivalis* between diabetics and non-diabetics

	Entamoeba gingivalis		
	No. examined	**No. +ve %**	No. –ve %
Diabetics	312	303 (97.1)	9 2.8
Non-diabetics	42	15 (35.7)	27 64.2
Total	**354**	**318 (89.8)**	**36 (10.2)**

P value=0.000

Table (6) Distribution of *T.tenax* between diabetics and non-diabetics

	T.tenax		
	No. examined	**No. +ve %**	No. –ve %
Diabetics	305	29 (9.5)	276 (90.4)
Non-diabetics	49	6 (12.2)	43 (87.7)
Total	**354**	**35 (9.9)**	**319 (90.1)**

P value=0.351

Conflict of interests.

There are non-conflicts of interest.

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