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RESEARCH ARTICLE

Assessment of Protozoa in Oral-Maxillofacial Disorders Regions with or without Cancer therapy and Radiotherapy

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Abstract

Cancer therapy and radiotherapy guide to many oral structures disorders consisting of: Harmful feeling, nutrient deficiency due to inability to eat, which increased the infection consequences. The performing study tended to point the protozoa's frequents Entamoeb gingivalis (E. givg.) and Trichomma Tenax (T.ten.) In patients associated with various oral and maxilla facial pathogeneses regions with or without cancer therapy or radiotherapy, and their correlations with the sex, age of those patients and individuals and how to early control upon these parasitic consequences infections in such patients have these disorders. This study collecting in 205 (100%) individuals, 150 (73.17%) patients with various oral disorders (84 males and 66 females) and 55 (26.82%) UN diseased persons (25 males and 30 females).The two groups range between 15-85 years attended to oral maxillofacial surgery department, in AL Gazy AL Hariri Hospital For Surgical Specialties with various oral cavity disorders and their oral hygiene ranged between gingival, periodontium and oral tissues disorders, most of them under or after cancer chemo therapeutics and radio therapeutic treatment periods or may not receiving yet. Swabs samples were collected by scraping various margins from inside of mouth contain. All samples were held in sterile slides with normal saliva taken to the laboratory of the same hospitals in order to examine and seen under light microscope. Statistically the various clinical cases of oral problems are displayed in this study highly significant in correlation between oral disorders and the frequency of parasites, Improving patients awareness of importance of dental and oral hygiene health before, during and after cancer therapeutic treatment, achieved by making proper oral hygiene instructions programs and minimized the oral disorders complications and their consequence.

Introduction

Cancer therapy and radiotherapy guide to many oral structures disorders consisting of: Harmful feeling, nutrient deficiency due to inability to eat, which increased the infection consequences. Patients oral cavities are suitable places to differ types of micro zoon proliferations [1].Entamoeb gingivalis (E. givg.) and Trichomma Tenax (T.ten.) in human mouth that associated with supprative inflamed gingival tissues, therefor they favorite contaminated circumstances [2].

Infected oral tissues symptoms resulting from combination between host's defense mechanism and those germs. It's very essential to indicate the microbes that infected the gum and supporting apparatus [3], which advancing to ligaments tearing, angular bone loss, harmful, periodontium infection, resulting consequently to teeth lost, if neglected without medication [4].Infections can be spread through direct contact with unsterilized and infectious dental instruments, dishes, spoons, spray, salivary fluid, and osculating [5, 6, 7].Just amoebae groups is E. gingivalis which has ability to phagocytize remnants of ingested germs nuclear, leukocytes, cell of epithelium, debris of cells and sporadically red blood cells [8, 2, 9].It has essential action in the etiology of this characterization [10, 4], as well as present in non-diseased persons's mouths, therefor some researchers consider this parasite might be exploited microbe [11, 12].

T.tenex absorved in mouth persons associated with bad oral hygiene that specialized it as a mark, there are four times more among periodontitis diseases then control persons [13, 14, 15].E-givgivalis detected in creviculer fluid, saliva, teeth surface plaque, inter proximal spaces, tonsils cysts depth. Some authors have believed that this parasite have role in dental decay formation [16, 17].

Mucosal cells necrosis and gingival polyps [18, 19].Beside that it's pathogenic specified with periodontal a disorder which has been presented in immune compromised patients [20].Beyond that it can be detected in swab's from patient mouth received pervious radiotherapy for partial glossoctomy, noticed that small enlarged cervical nodules beside surgical healing line [21].Furthermore it might progress many consequences diseases example; mandibular bone, pulmonary and acute Osteomyelitis [2,22].

T. tenax frequently noticed in patients associated with advanced periodontitis [1, 23]. In the base of teeth with pus pocket [23], course of sinusitis, tonsillitis, esophageal cancer, Jaw abscess [24].Enlarged upper cervical lymph nodes [25], infection sub maxillary gland [5]. Trichomoniasis caused by passing the T. tenax to the respiratory tract which diluted in fluid aspiration from oropharynx [26, 27].

And in pleuro- pulmonary infection [24, 28].A class of medicines are the antiparasitic agent which related for treatment of parasitic diseases specially those caused by amoeba [29].And protozoa [30].Drugs are acting mainly by inhibiting their proliferation or by piecing them [31]. The wide rank of parasitic infection caused by protozoa from various species could be treated by these medications with efficacy [32].

The performing study tended to pointed the protozoa's frequents E. ging. and T.ten. In patients associated with various oral and maxilla facial pathogeneses regions with or without cancer therapy or radiotherapy, and their correlations with the sex, age of those patients and individuals and how to early control upon these parasitic consequences infections in such patients have these disorders.

Patients and Method

This is a study carried out on 150 patients (84 males and 66 females) and shown 55 healthy individuals acting as control group (25 males and 30 females). The two groups range between 15-85 years attended to oral maxillofacial surgery department, in AL Gazy AL Hariri Hospital For Surgical Specialties with various oral cavity disorders, most of them under or after cancer chemo therapeutics and radio therapeutic treatment periods or may not receiving yet ,including of: Gingivitis, Periodontitis, Advanced Periodontitis, Percoronitis, Bimaxillary Fracture Fixation Devices, Post Extraction Impacted Wisdom, Post Extraction Multiple Teeth Dry Socket, Per apical Lesion Fistula, Pyogenic Jaw Infection, Sub Maxillary Gland Infection, Maxillary Sinusitis, Acute Osteomyelitis, Lip Commissure, Oral Mucositis, Marginal Mandibuloctomy, Partial Glossoctomy, Carcinoma of Buccal Mucosa, Carcinoma of Lower Alveoli and the Carcinoma of Hart Palate.

Detailed medical health status information's have been applied on physical cases examination for all patients involved by personal study, this categorize: name, age, sex general health status, complaining from systemic diseases, history of demonstration drugs, surgical operations, trauma, cancer chemo therapy, cancer radio therapy during the last six months.

All patients oral cavities disorders have examined by one oral maxilla facial surgeon clinically, then swabs samples were collected by scraping various margins from inside of mouth contains: surface surrounding marginal gingival, deep pockets, exposed necrotic bone, un healed socket, vestibular swelling, sites of healed mucosal line, extra and intra oral fistula, in addition to the fine needle aspiration materials have taken from enlarged lymph nodes and sent to histo-pathological study for some patients associated with nodular enlargement.

All samples were held in sterile slides with normal saliva taken to the laboratory of the same hospitals in order to examine with wet-mount method at room temperature (25-28 C) then dyed with Giemsa stain and seen under light microscope (40 X, 100 X, 200 X, 400 X) to detected motional of the parasites. The T. ten. Was indicated by locomotion character and it flagella. Whereas the E .gin. Were explored by their presence of vacuoles and the swelling of pseudopod a formation. SPSS (version 24) was stated for data description chi square test for categorical data comparison analysis with $P < 0.005$ act as a significant.

Results

This study collecting in 205 (100%) individuals, 150 (73.17%) patients with various oral disorders and 55 (26.82 %) UN

diseased persons, as in Figure (1, a).All individuals were attending to ALKazy ALHariri hospital for Surgical Specialties and their oral hygiene ranged between gingival, periodontimn and oral tissues disorders. Out of the 150 patients totally 126 (84%) patients indicated positive oral parasites, including 51 (34%) patients for E.ging., 15 (10%) patients for T. ten ., 60(40%) patients for both types of parasites, while oral parasite was not found in 24 (16%) individuals among same group.

Figure (1, b).A bout the 55 healthy person was seen 11(20%) of them found positive parasites , containing 6 (10.9%) has E.gIng., 3 (5.45%) has T.ten. 2(3.63%) have both parasite, but not in 44(80%) individuals Figure (1,C).The statistical analysis demonstrated that there was a significant differences (p = 0.028) was observed in the frequencies of oral parasites among these two groups of person Fig: (1. A, b, c) Figure (2), Chart illustrates the relationship between patients age and occurrence of microorganism. E.ging. was more common in persons aged within 66-75 years (54.5%), whereas the T.ten. was present in patients aged 36 to 45 years (44.4%), which both commensals were explored in age 26-35 years (80%) which in its highest rate.

There was statistically high significant correlation between the age of persons and frequencies of these microns. X^2= 137.9, P<0.001, high significant).Figure (3), the chart reveals the frequency of parasites according to the sex. Out of 150 patients was found 84 (56%) men and 66(44%) were women. out of 55 control persons, 30 (54.54%) were men and 25 (45.45%) were women.

Concerning to the diseased group, result displayed that occurrence of E.ging. and T.ten. Was higher in males patients 34 (40.47 %), 15 (17.85%) respectively compared with females patients 17 (25.75). 0% respectively. There was a high significant correlation between the frequency microorganisms within the sex of patients x^2 = 17.86, P<0.001, high significant.

Figure (4), the chart depicts the occurrence of oral parasites among patients with various oral disorders in oral maxillofacial regions in 150 patients. Over all, E.ging. Was presented in highest rate in patients associated with acute osteomyelitis, whereas the T.ten.

Presented in it highest within patients have advanced periodontitis and Carcinoma of lower Alveoli. The both parasite was found in patients with Pre apical lesion fistula and Maxillary sinusitis in its highest proportions. Half percentage of patients' infection by E.ging. 50 % with Percoronitis, Bimaxillary fracture fixation devices, Sub maxillary gland infection, Carcinoma of lower Alveoli, Partial Glossoctomy, Carcinoma of hart palate and almost two third (66.6%) of patients associated with Post extraction multiple teeth dry socket.

Once again in patients infected by T.ten., 50 % were associated Periodontitis and Carcinoma of lower Alveoli. AL most a third of patients with Post extraction multiple teeth dry sockets 33.3% infected by T.tenx. Both parasites registered half proportion 50% for patients have Advanced periodontitis, Percoronitis, Bimaxillary fracture fixation devices, Post extraction impacted wisdom, Sub maxillary gland infection, Oral Mucositis and Carcinoma of hart palate. However a significant proportion association patient with Periodontitis, Pyogenic Jaw infection and Marginal mandibuloctomy ranged between 60% to 66.6%. Concerning to the patients with post extraction multiple teeth, 9 (100 %) cases, E.ging.

Which constitutes 66.6% is almost twice as popular as T.ten. which is 33.3%, while the E.ging. and both parasites whom rates are relatively similar 33.3% in patients who post extracted impacted wisdom teeth infection. Gingivitis and carcinoma of Buccal mucosa were not noted by presence of oral protozoa which is considerably negative 100%.

There was a statistically high significant correlation between the oral disorders in patients during receiving and post cancer chemotherapy and cancer radiotherapy in oral facial regions and the occurrence of these parasites (x^2 = 128.9, P < 0.001 H.S). 137 persons were washed their mouths daily three times. Film-coated tablets 500 mg of Metranadozole gave twice daily for 3 days by oral swallowing for 46 (36.5%) patients, whereas Duflucan capsules of 150 mg swallowed.

Once capsules each week continuous for two weeks only by 45 (35%) patients. 35 (27.77%) were oiled their oral mucosa three times daily before meals by Miconoz (Miconozole 2 %) oral gel as a treatment for these Micro

zones. A significant correlation observed between these medications types and their effects in the response of inhibition of attendance of oral protozoa with these oral disorders of patients Tables (1) Our assessments demonstrate that 137 (100%) persons infected by oral parasites including 126 (91.7 %) from diseased oral regions whose receiving chemo therapy and radio therapy, and only 11 (8.02%) summed from healthy persons. Figure (1).

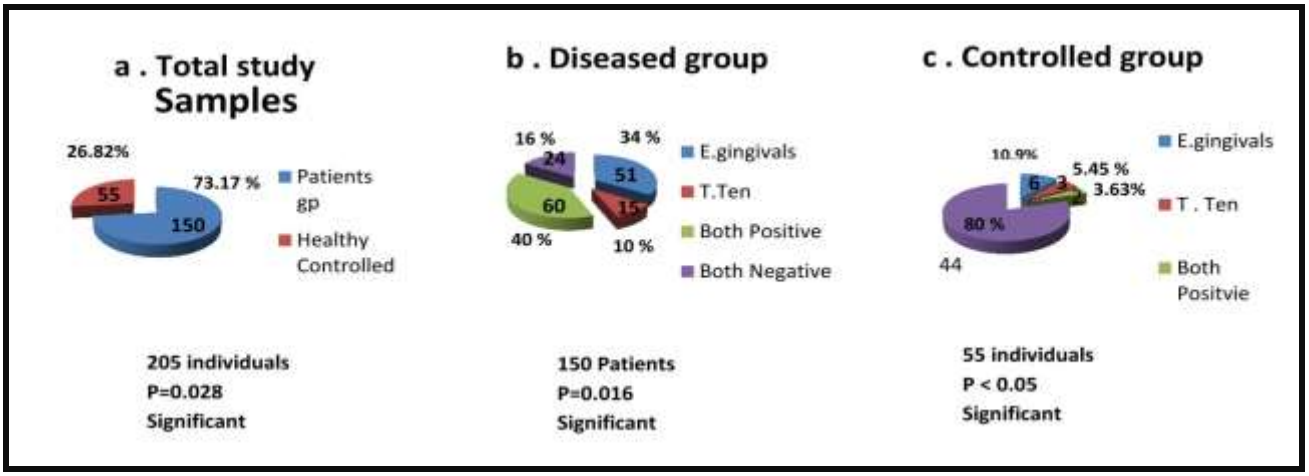

Figure 1: Distribution rate of E. Gingivalis and T. tenex in 205 individuals (150 patients' diseases group and 55 healthy control group) with oral disorders in oral maxillofacial regions

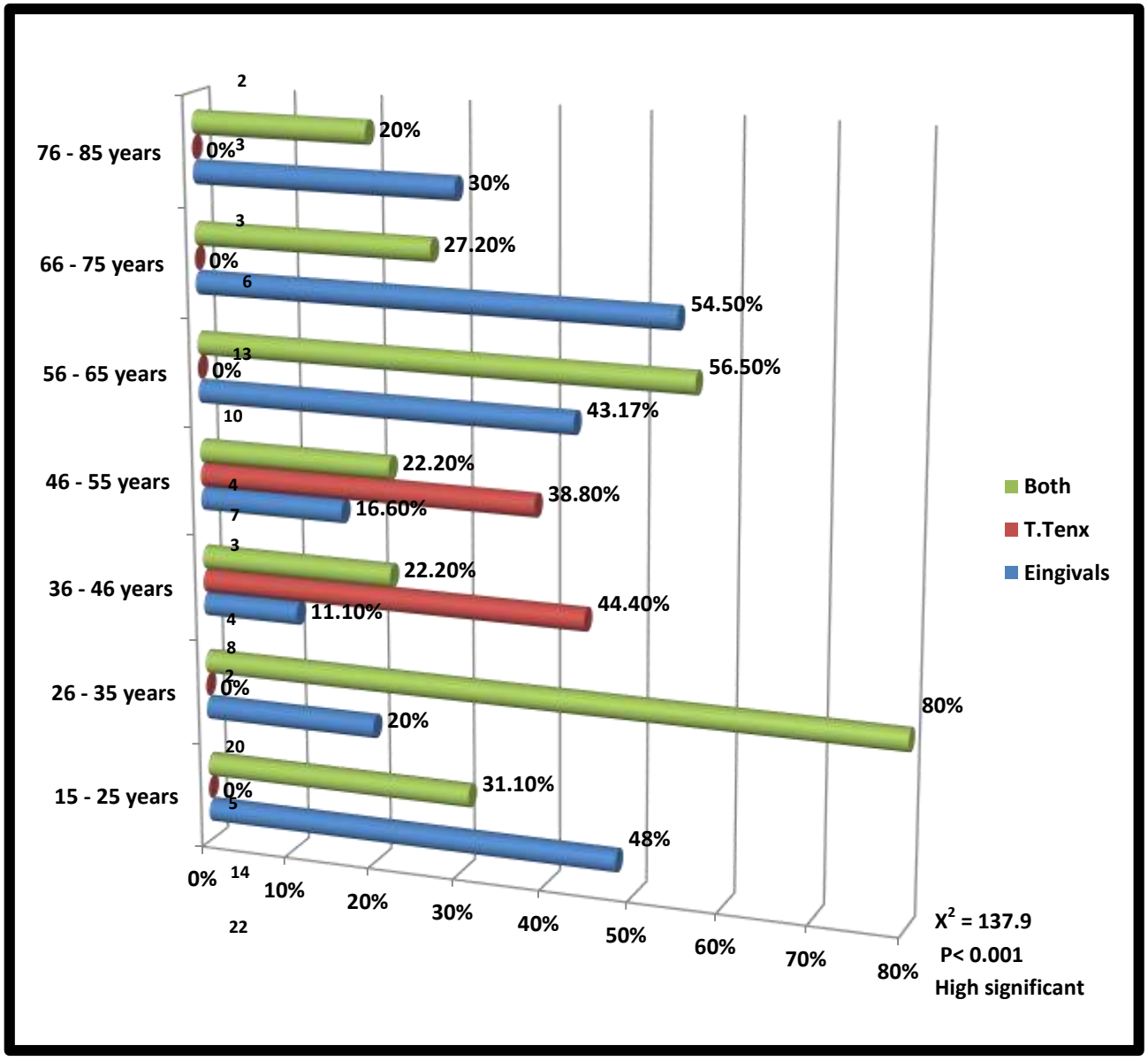

Figure 2: Distributed of E. Gingivalis and T. tenx rates according to patients age

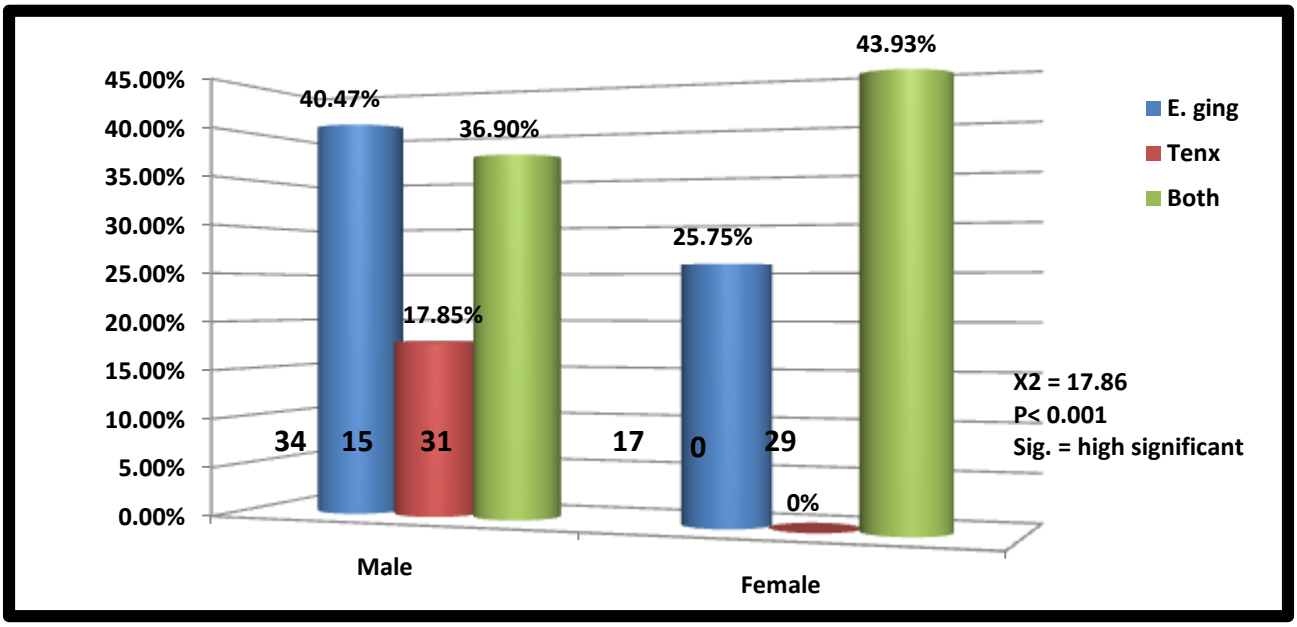

Figure 3: Distribution E. Gingivalis and T. tenex rate according to patient's sex = 150

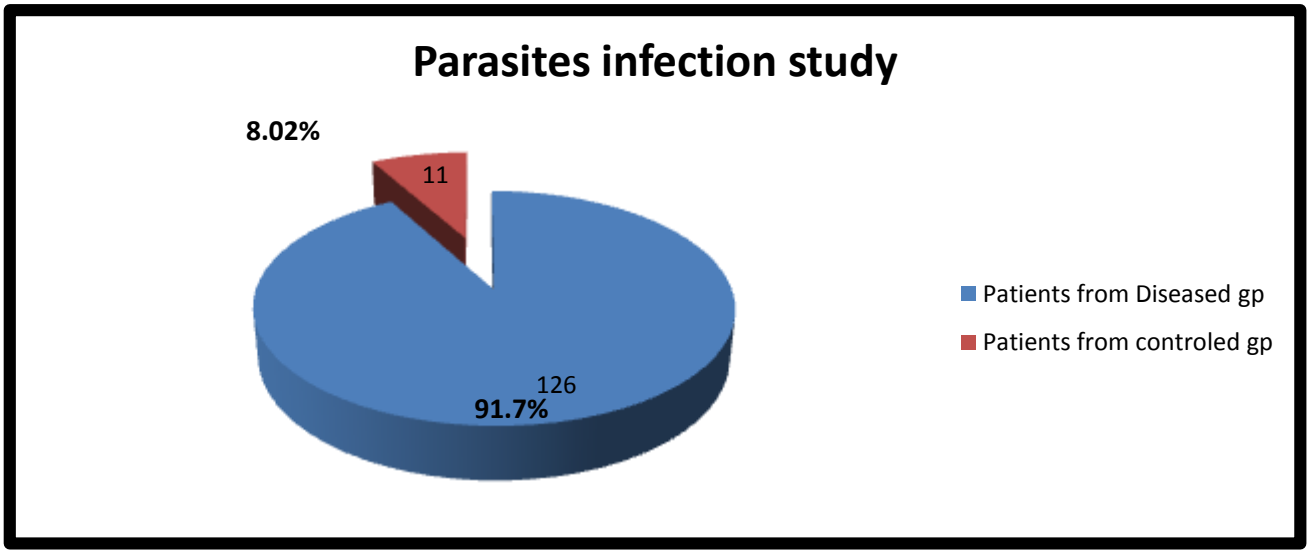

Figure 4: Distribution parasites in oral cavites of study samples 137 parasites infection persons from 205 individuals

Table 1: Abbreviations of the oral disorders in maxillofacial regions

Words	Abbreviations
Gingivitis	G
Periodontitis	P
Advanced periodontitis	AP
Percoronitis	PC
Bimaxillary fracture fixation devices	BMFFD
Post extraction impacted wisdom teeth	PEIW
Post extraction multiple teeth dry socket	PEMTDS
Per apical lesion fistula	PLF
Pyogenic Jaw infection	PJI
Sub maxillary gland infection	SMGI
Maxillary sinusitis	MS
Acute osteomyelitis	AO
Lip commissure	LC
Oral Mucositis	OM
Marginal mandibuloctomy	MM
Partial Glossoctomy	PG
Carcinoma of Buccal Mucosa	CBM
Carcinoma of lower Alveoli	CLA
Carcinoma of hart palate	CHP

Table 2: Distribution of oral parasitic infection (E. gingivalis and T.tenax) among patients with different oral Disorders present in oral maxillofacial regions

Oral Disorders	Sample		E. gingivalis +ve		T. Tenax +ve		Both +ve		Both -ve	
	No.	%	No.	%	No.	%	No.	%	No.	%
G	6	4%	0	0	0	0	0	0	6	100%
P	9	6 %	3	33.3%	0	0	6	66.6%	0	0
AP	6	4 %	0	0	3	50%	3	50 %	0	0
PC	6	4%	3	50 %	0	0	3	50%	0	0
BMFFD	6	4%	3	50 %	0	0	3	50%	0	0
PEIWI	9	6%	3	33.3%	0	0	3	33.3%	3	33.3%
PEMTDS	9	6%	6	66.6%	3	33.3%	0	0	0	0
PLF	3	2%	0	0	0	0	3	100%	0	0
BJF	9	6%	3	33.3%	0	0	6	66.6%	0	0
SMGI	6	4%	3	50%	0	0	3	50 %	0	0
MS	3	2%	0	0	0	0	3	100%	0	0
AO	3	2%	3	100%	0	0	0	0	0	0
LC	18	12 %	6	33.3 %	3	16.6%	6	33.3%	3	16.6%
OM	12	8%	3	25 %	0	0	6	50%	3	25%
MM	15	10 %	3	20 %	0	0	9	60 %	3	20 %
PG	12	8%	6	50 %	3	25%	3	25%	0	0
CBM	6	4 %	0	0	0	0	0	0	6	100 %
CLA	6	4 %	3	50%	3	50%	0	0	0	0
CHP	6	4 %	3	50 %	0	0	3	50%	0	0
Total	**150**	**100%**	**51**	**34%**	**15**	**10%**	**60**	**40 %**	**24**	**16%**
X2 = 128.9 P<0.001 High significant										

Table 3: Medications taken for the oral protozal infections by (126) patients with oral disorder in the oral – maxillofacial regions with controlled individuals

Drug name	Dose	Time	Usage Administration	Patient No.%
1- Metronidazole	Film-coated tablets 500 mg	1 X 2 For 3.days	Oral use swolloing	46 36.5%
2- Duflucan	Capsule 150 mg	One capsule each a week for 2 weeks	Oral use swolloing	45 35 %
3- Miconaz	Miconezole 210 oral gel	1 X 3 Before eating	Intra oral mucosa oiled	35 27.77 %
4- Normal saline Or chlorohexidine ((combination))	Solution 2 %	1 X 3 Daily	Intra oral gargle	126 100 % + 11 control
Total				**137** **100 %**
P = 0.048 ,significant				

Discussion

Oral ailments are consequence causes of pertaining to individual's health status .The gingival tissue and their supporting apparatus disorders are often present, therefore many researchers have been carried out in the frequencies of E.ging. and T. ten. In patients associated with various dental and oral disorders. Inadequate oral hygiene prepares a harmonious environment for attendance and proliferation of oral parasites.

In this present study occurrence of oral protozoa (126 /150) samples : 84% among oral disorders, patients have oral and maxillofacial regions problems which was higher than that in control individuals, this is in accordance with many studies [3, 4, 9, 18, 33, 34, 35, 36]. Who mentioned that the patients with pathetic peridontium and tissues disorders were more frequency of parasitic infections than those healthy groups [3]. Stated that the presence of parasites was 81.4% among oral sick persons? Concerning to E.ging. Frequent rate was 34% in our study, this is in line with [36], who resulted that 35% was E.ging present and as well as [3, 12, 16, 18, 34], who reported that E.ging. Perhaps be opportunistic, therefore they have ability of multiplication in survival places acting by the diseased periodentium tissue especially buccal vestibule.

Our occurrence rates of T.ten. was little about (10%) this was approximately two on the researches [4, 18, 37, 38], who indicated that incidence of oral cavities with T.tenax universe considerable registers from 4.0 to 53%, as well as [4], detected that relationships between the raising rates of microzoan presents and advancement of disease has been evidenced currently, despite that the accurate mechanism of periodontium

distraction is yet mysterious .In addition our results confirm with [1, 23, 38, 39]who rationalized incidence ranged from 12-32%, while disconfirm with these authors [3] who elucidated frequency rates of T.ten 23-53% this may be referred to samples number were different or differences of various oral diseases or their different times for receiving cancer therapy or radio therapy doses. 46 %of patients with periodontitis were diseased by both T.ten. and E.ging. in present study, these disclosed by Pestenchyan et al, [19, 40, 41], which is nearly the same our result 40%.

Our finding revealed that the occurrence of E.ging was superior to the T.ten. Among diseased patients which correspond by other authors [42, 43, 44].Whatever differs with results ordered by [45], who established that the presence rate of T.ten was greater than E.gingivalis frequency. This may be due to small size carried out by his research or due to attribute to the type's oral problems .Respecting to the sex both parasites were more common in men than women.

There was confirmation findings between this study and those authors studies [18, 34, 41], this can be simplified by concentrating headful of females to their mouth smiling leading preserve their teeth and surrounding supporting tissues [36, 46, 47], and disconfirm with those researchers [33, 48], in reporting that both types of microbial were highly incident with women than men. Regarding to the age. E.ging. was detected in maximum rate in age group ranging 66-75 years.

This comes in agreement with several researchers [41, 49], who declared that oral parasites are raising in their occurrence within advancing in years. Our interpretion is that E. ging. Has important influence in the disordered oral tissues. Both microns registered highly percentage within 26-35 years among age diseased groups whereas T.ten. Comprised in its peak presence within of age (36- 45) years in recent study.

This goes together with other studies [16, 36] as well the our study observed highly significant in correlation between occurrence of oral commensals and age, however there was no harmonizing with [3, 18, 42].Who concluding that the statistical analysis of correlation between prevalence of parasitic infection inside oral cavity and patients age was non-significant. Cancer therapy and radiotherapy leaded to various oral dilemmas which can be categorized: microbial of infections, mucosal inflammation , dry mouth, bleeding, permanent or temporary parasethesia, enlargement of facial and cervical lymph nodes, major salivary gland infection, swelling, lesion within soft and hard tissue, gum inflammation with supporting apparatus and t nutrient deficiency.

Our resulting data concur the detection of the this study [50] in their expounding that E.gingiva in 135 unhealthy individuals associated with different oral problems such as Para dental diseases , teeth decay , pulp inflammation, necrosis of bone, ulcer necrosis stomatitis. As well as [51] it has been stated that out of all groups of patients who associated with cancer might complain temporary or permanent oral complexity as a result from receiving chemotherapy doses which induce undesirable action on the mucosa, periodontal of tissue, tooth pulp, major salivary of oral, per apical lesion next to dead pulp and [11].

Explained that cancer therapy for patients with bad oral hygiene lead to evolve and advancement of periodontal disease due to multiplications of these protozoans with the surviving of other microorganism and increasing in their occurrence in such unusual circumstance. Present study showed that half proportion of advanced periodontitis in addition to two third percentage of periodontitis cases belonged to both parasites infection this coincided with [43,44] in their illustration that half patients with periodontal pocket dealing with highly incident of E.gingivalis [52].

Clarified that formation lesion with periodontium might tear the gum. China [53] noticed that unhealthier oral cavities of students who do not usually, have greater incidence rates 28.3% of E.gingvials in periodontitis patients [22].Said E.gingivals comprised more found and commensal micron in complaints with teeth loss, diseased gingiva or low immunity defense system of patients [54]. Reported that the growth of oral protozoan in improper oral tissues cases may cause to progress oral complications and general body disorders [55].

Established that saliva and dental plaque of HIV-infected with periodontitis 10 (77%)

detected E.gingivalis. Our study showed that patients with per apical lesion fistula that opened against buccal vestibular fold and the pyogenic jaw infections cases were infection by both oral protozoa (100 %, 66.6%) respectively, these findings were in agreement with [10] who indicated that immunosuppressed animals experiment insisted that the growth and unacceptable activities of E.gingivalis were increased by lesions present.

Dealing with Bimaxillary fracture fixation devices patients were registered 66.6% that means two third of patients infected by both parasites types, and statistically the difference was significant which dispute with [45] who stated that patients wearing appliances were not significant with prevalence of parasitic infection in mouth.

The reasons in our opinion that patient not followed the identical mouth health care instructions by clinicians during receiving their treatment period. The patients with oral mucositis rated 50% with oral protozoa infections. This result consent to the other research [56] who showed that oral mucosal infections usually appear from 5-10 days next the starting doses of chemotherapeutic treatment which persists from 7-42 days or more.

Chan E .V 2003 [57] found in 12-80% of patients had hard masses and oral lesions following to the chemotherapeutic treatment. There is ingreement between present study and those authors [21, 22] in reporting that cancer therapy patients for multiple myloma had been detected one case of E. gingivalis in patients associated with acute osteomyelitis. In cases of patients associated with Post extraction impacted wisdom and Post extraction multiple teeth dry socket were infected 66.6% and 33.3% by E. ging. Respectively and 33.3% by T. ten infection for each .This is mirrored to [9]. Who stated that the findings of seven mobile teeth, showed 6 of them by E. gingivals infection and 3 with T. ten. Infections.

This may be belong to cancer therapeutic doses receiving. Parasitic infections are usually treated by anti-parasitic drugs associated with mouth gargles or can be treated by antibiotic (antibacterial or antifungal medications) as prescribed to our patients in this study. This in agreement with [51] who stated that all dentists would prescribe anti microbial of therapy , at first local dose forms that should touch the microorganism to effected it, by using the topical dose forms daily many times and persist for several weeks.

Conclusion

Oral infection with protozoa is an aspect ratio considered with pathological variations that associating patients diseases. In oral and maxillofacial regions. Improving patient's awareness of importance of dental and oral hygiene health before, during and after cancer therapeutic treatment achieved by making proper oral hygiene instructions programs and minimized the oral disorders complications and their consequence.

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