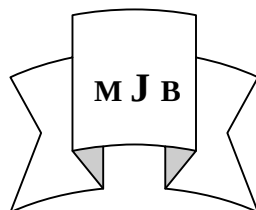


Oral Carriage of *Candida spp.* in Cancer Patients in Babylon Province

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Abstract

Hundred oral swabs from cancer patients were investigated for oral carriage rate of *Candida species* in outpatients clinic of oncology in Babylon province from January to may 2005. Seventy of them were females and thirty were males, their ages ranged from 6-90 years. 53 (53%) of them revealed positive results, 51 (96.22%) were *C.albicans* and 2 (3.78%) were *C.tropicalis*. Eighty nine of those cancer patients were on antibiotic and oral steroid therapy in whom thirty six of them raveled positive results. Relatively high percentage 9 (18%) was found in breast cancer and 7 (16%), 3 (15%) for patients with cancer of genital organs and gastrointestinal tract respectively. The last one 2 (3%) was observed in cancer of skin, also it was found high oral carriage (46%) in patients with oral thrush in relation to oral ulceration (44%).

الخلاصة

تم فحص 100 مسحة فموية من المرضى المصابين بالسرطان لغرض معرفة نسبة الحمل الفموي لأنواع المبيضات في محافظة بابل من شهر كانون الثاني إلى أيار 2005. وكانوا 70 من الإناث و 30 من الذكور وكان معدل أعمارهم تراوح من 6-90 سنة. 53 (53%) منهم أظهرت نتائج ايجابية وكانت 51 (96.22%) للمبيضة البيضاء و 2 (3.78%) للمبيضة الاستوائية. 89 من المرضى المصابين بالسرطان كانوا يعالجون بالمضادات الحيوية والستيرويدات، 36 منهم أعطوا نتائج ايجابية. وقد وجد نسبة عالية 9:53 (18%) عند اللذين يعانون من سرطان الثدي، 7 (16%) و 3 (15%) عند المرضى المصابين بسرطان الاعضاء التناسلية والقناة المعوية المعوية على التوالي. والنسبة الأقل 2 (3%) لوحظت عند المرضى المصابين بسرطان الجلد. وقد وجد نسبة عالية من الحمل الفموي (46%) عند المرضى المصابين بالقلاع مقارنة بالمرضى المصابين بتقرحات الفم (44%).

Introduction

The yeast like fungus *Candida albicans* and a few other *Candida* species are capable of producing skin, mucous membrane and internal infections [1]. The organism lives as normal flora in mouth, vagina, and gastrointestinal tract. It ables to reproduce the budding of oval yeast forms [2]. Colonization with *C.albicans* or another species may

occur during birth directly from the birth canal and some time during infancy or perhaps later in life [1]. It was found that fewer than 15% of normal subject carry yeasts in the mouth when *C.albicans* carriage is consist about 10%, this percentage may increase up to 41.7 % in hospitalized patient [3].

The CD4 T.cell mediated immunity is implicated in resistance to

candidiasis by releasing cytokines that activate macrophages to destroy the fungi [4].

Patients with compromised host defenses are susceptible to which healthy people are exposed but usually resistant. *C.albicans* is the most common opportunistic pathogens infecting patients with neoplastic disease especially those patients suffering from cancer [5].

Disturbance of normal for a physiology by malignancies especially leukemia and lymphoma or immunosuppressive drugs and oral steroids or by using antibiotics may allow the yeast to be developed into pathogenic form (vegetative form) and causing serious systemic *candidiasis* [6, 7] with mortality rate 80% in the 1970 that decline to 40% in the 1990 due to the early use of antifungal treatment.

Aim of the study

This study aimed to determine the rate of oral carriage of *Candida spp.* in cancer patients in Babylon province to determine the early uses of oral antifungal treatment to prevent the serious systemic *candidiasis* from occurrence.

Patients and methods

Patients

During the period from January to May 2005 a total of 100 oral swabs had been collected, from 100 patient (70 females, and 30 males). The swabs were taken randomly from the out patient clinic of oncology, their ages ranged from 6-90 years with a mean of (45.5±12.2)years. The duration of their disease ranged from 6 month-10 years, duration of treatment (cytotoxic drugs, radiotherapy, antibiotics, and steroids)

2month-10 years. Their nutritional status was good and only two of them were alcoholic. Three patients were neutropenic. The type of tumor was noted and the examination of the mouth was done to report the presence of mouth ulcers, oral thrush.

Methods:

Isolation and identification of *Candida spp.* were carried out according to [8].

Results

Table (1) show the rate of oral carriage of *Candida spp.* The results indicated that 53:100(53%) revealed positive results, since 51:53 (96.22%) were *C.albicans* and 2:53 (3.78%) were *C.tropicalis*. Table (2) shows the distribution of oral carriage according to the sex since 35:70 of females were positive while 18:30 of males were positive. As shown in table (3), 89 of those patients were on antibiotics and oral steroids therapy in whom only 36 of them were found to carry *Candida spp* in their mouth as well as all the three neutropenic patients were positive for *Candida spp*. Table (4) indicates the relation of the type of tumor with oral carriage rate of *Candida spp*, high percentage 9:53 (18%) was found in patients with breast cancer and 7:53(16%), 3:53(15%) for patients with cancer of genital organs and gastro intestinal tract respectively and the last percentage 2:53 (3%) was observed in cancer of skin and bronchi.

Table (5) shows the effect of mouth diseases on *Candida*. It was found that a high percentage 46% was recording. patients suffering from oral thrush while in patients with oral ulceration the frequency was 44%.

Table 1 The rate of oral carriage of *Candida* spp. In cancer patients.

Samples	Positive		Negative
100	53:100(53%)	51:53 (96.22) <i>C.albicans</i> 2:53 (3.78%) <i>C.tropicalis</i>	47:100 (47%)

Table 2 Sex distribution of oral carriage.

Sex	No. of cases	Positive
Females	70	35
Males	30	18
Total	100	53

Table 3 The relation between some of predisposing factors and cancer in the oral carriage of *Candida* spp.

Predisposing factor	No. of cases	Positive
Antibiotics Steroid therapy	89	36
Neutropenia	3	3

Table 4 The effect of type of tumor on oral carriage rate of *Candida*.spp.

Type of tumor	No. of cases	Positive	Percents %
Cancer of breast	28	10	18%
Cancer of genital organs (ovary, uterus, placenta)	9	9	16%
Cancer of GIT	8	3	15%
Cancer of larynx	8	7	12%
Non Hodgkin lymphoma	9	5	8%
Cancer of bladder and kidney	7	3	5%
Hodgkin lymphoma	7	3	5%
Cancer of brain	4	3	5%
Cancer of tongue	4	3	5%
Cancer of bronchi	6	2	3%
Cancer of skin	3	2	3%
Others	7	3	5%
Total	100	53	100%

Table 5 The effect of mouth diseases on oral carriage rate of *Candida.spp*.

Type of diseases	No. of cases	Positive	Percents %
Oral thrush	15:100(15%)	7:15	46%
Oral ulceration	9:100(9%)	4:9	44%
Total	24:100(24%)		

Discussion

In this study the oral carriage of *Candida spp*. Was investigated on oral swabs taken from patients who were suffering from different type of malignancies. 53% were given positive results in which 96.22 of them were *C.albicans*. The high rate carriage in females may be due to the effect of sex hormones on cellular immunity [9]. According to available knowledge this is the first study that being been conducted in Babylon province and that correlated with the presence of oral *Candida spp*. In patients with malignancies. However, Odds (1979) [10] isolated *C.albicans* from the mouth of only 10% of normal persons, while in 1988 Odds [11] found the total oral yeast spp. Carriage rate was 30% and *C.albicans* was 20%.

The high percent of oral carriage recorded in this study can be attributed to the lowering of cell mediated immunity, which is responsible for the resistance against cancer in cancer patients [11]. Mouth ulcers are a frequent cause of morbidity in patients rendered neutropenic as a result of chemotherapy [12]. Our results suggest that fungal infections may be important in the etiology of oral ulceration and oral antifungal agents may have oral in the prophylaxis and treatment of such patients [13]. Ching [14] stated that *Candida spp*. (*C.albicans*, *C.drobicalis*) are air borne fungi and this yeast can be isolated uniquely at high number particularly immunocompromised states, diabetic

patients, pregnancy, chronic antibiotic use.

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