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YEASTS IN DIABETIC CLINICALLY TREATED PATIENTS

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Abstract

There were investigated the frequency as well the strains of candidas from the smears of faces, mouth and vaginas in clinically controlled diabetic patients.From 536 faces smears specimens there were found positive in 69 (7,88%), most of them in a range of 10-30 colonies pro smear (47% and 17,64% of positive smears specimens, but also there were present specimens with 100 and more to the 1000 colonies in 33,28%, 17,64% and 17,64% of positive specimens).The most frequent isolate was C.albicans (66,17%) and non albicans in 33,35% of positive specimens (C.lusitaniae, C.kefyr,C.tropicalis,C.parapsilosis and G.candidum).From the 676 specimens from the mouth there were found positive 37,85% of the specimens and the most frequent isolation was in the group of 10 colonies pro smear (36,42%) and less frequent in the group with to 30 and 100 colonies (25,25% and 24,70%).More than 100 to 1000 colonies were isolated in 15,70% of the specimens.

Isolated yeasts were represented by C.albicans (86,73%) and non albicans by C.tropicalis, C.lusitaniae, C.kefyr, C.glabrata, C.parapsilosis and G.candidum.

From the vaginal smears (518 specimens) candidas were isolated in 25,72% of the specimens and the frequency of 30 and 100 colonies ranged from 16,98% and 20,25%.More than 100 to 1000 colonies were isolated in 28,30% of vaginal smears.C.albicans was represented in vaginal smears with 77,72% of isolates, and non C.albicans strains with 27,35% (C.tropicalis, C.glabrata, C.parapsilosis and C.famata).

Authors discusse these results in respect to the influence of diabetic status and the relevance of finding of commensalism versus infection.

Key words: candidas, diabetic patients

Introducion

Diabetes mellitus is now treated as a disease of complex aethiology with besides genetic factors is presumed that also immunodeficiency and nonadequate immunoreactive response could be taken as predisposing cofactors.There are found antiinsulin antibodies, as well immune complex, and deficiency in T lymphocytes, meaning on the cellular and humoral immunodeficiency(1).It is also well know, that yeasts, especially candida species, as the endogen commensalls, are often the cause of complications in diabetic patients with various clinical course in diabetic patients.

The candidas are normal commensals in the body of humans and animals wich in special conditions become cause of complications of the preexisting disease, but so the primary causative agents, due to the virulence factors of microorganisms and the diminished or non existing humoral or cellular defense of humans or animals.It seemed valuable to investigate the presence of candidas in diabetic patients in

mouth, vagina and stool specimens and try to find any correlation between the number of isolating candidas and the clinical course in diabetic patients treated in the Clinic for endocrinology in Clinical Center University Sarajevo.

Matherial and methods

Smears from the mouth, vagina and faeces from diabetic patients were taken on the Clinic for endocrinology UKC Sarajevo adn send the same day to the Mycological laboratory Institute for microbiology, parasitology and immunology of University Clinical Center and in the same day inoculated on Sabouraud dextrose agar with antibiotics.2 days after of inoculation and incubation on 30°C culture were treated as follow: Blastesis test on serum for 4 hours, for determining C.albicans, and non C.albicans isolates were determined on species level on the API 20 C (bioMerrieux).Any plate of the inoculated specimens was also noted on the number of colonies (Grillot).

Results

The results are presented on Tables I, II and III, after the source-origin of the specimens and from tables is clearly visible the frequency of positive samples and the species of isolated yeasts.It is clear that the frequency from the mouth specimens was 37,85%, from vagina 25,72% and from the stool 7,88%.The most frequent yeast was C.albicans: from the mouth specimens 86,73%, from the vagina 72,64% and from the stool 66,17%.On the tables is also visible the number of colonies in each origin of specimens. (Tables 1, 2 and 3).

Table – 1. Results of isolations from mouth's specimens

MOUTH SPECIMENS
TOTAL 536 POSITIVES 140 (37,85%)

NUMBER OF COLONIES (%)	
<10	51 (36,42%)
10 - 30	33 (23,25%)
30 - 100	34 (24,70%)
100 – 1000, > 1000	22 (15,70%)

CANDIDA ALBICANS 120 (86,73 %)
Non CANDIDA ALBICANS 18 (12,85%);
C. TROPICALIS, C.LUSITANIAE, C.KEFYR,C.GLABRATA, C.PARAPSILOSIS, GEOTRICHUM CANDIDUM.

Table –2. Results of isolations from vaginal specimens

VAGINAL SPECIMENS
TOTAL 412 POSITIVES 106 (25,72%)

NUMBER OF COLONIES (%)	
<10	36 (33,96%)
10 - 30	18 (16,98%)
30 - 100	22 (20,25%)
100 – 1000, > 1000	30 (28,30%)

CANDIDA ALBICANS 77 (72,64 %)
Non CANDIDA ALBICANS 29 (27,35%);
C. TROPICALIS , C.GLABRATA, C. FAMATA, C.PARAPSILOSIS.

Table –3. Results of isolations from faces specimens

STOOL SPECIMENS
TOTAL 536 POSITIVES 68 (7,88%)

NUMBER OF COLONIES (%)	
<10	32 (47%)
10 - 30	12 (17,64%)
30 - 100	12 (17,64%)
100 – 1000, > 1000	12 (17,64%)

CANDIDA ALBICANS 45 (66,17 %)
Non CANDIDA ALBICANS 23 (33,35%);
C. TROPICALIS, C.LUSITANIAE, C.KEFYR,C.GLABRATA, C.PARAPSILOSIS,
GEOTRICHUM CANDIDUM.

Discussion

Number of colonies and positive isolation

As is from tables visible, positive isolation was quite different from different localities, mouth, vagina and stool, as is also the number of isolated yeasts in each locality.As it could be seen, the most frequent isolation was found in specimens from mouth (37,85%), than from vagina (25,72%) and at the less from stool specimens (7,88%).These results could be correlated with any others, because many authors connect their results of positive isolation from these localities with the different status of the patients, resulting that in some localities is ranging from zero to 50% and more, without taking in consideration the number of isolated yeasts colonies.

Table 4. After GRILLOT (2)

less than 5 colonies	very rare colonies
more than 5 – 15 colonies	rare colonies
15 colonies- less than 50	few number of colonies
50 – 200 colonies	numerous colonies
more than 200 colonies	very numerous colonies

From our results this significant number present in mouths specimens (15,70%), vaginal specimens (28,30%) and in stool specimens (17,64%), allthough there could not be eliminated specimens with 30-100 colonies in all isolates (24, 70% in mouth, 20,25% in vagina and 17,64% in stool specimens).Only Plaine and cow (3) found candidas in diabetic patients in 4,5% with high percent of asymptomatic vaginal candidosis (71%), but requiring as pathogenic findings the presence of mycelia in smears.This commensalism is expressed as the result of activities of different local factors on the mouth, vagina and intestinal mucosal, where are existing really different activities on each mucosal.

On the mouth and vaginal mucosals are really important immunologic status on each mucosal and are different.Vulvovaginal candidosis is the frequent in immunocompromised and as well noncompromised patients, till oropharingeal candidosis is present with same frequency in both groups, compromised and noncompromised patients.In most (if not in all) cases candidas are commensal of

gastrointestinal and lower reproductive tract, but in most healthy individuals there exists a candida specific protective immunity.Still, there exists different protective mechanisms against oropharingeal and vaginal candidosis.In oropharingeal candidosis local and systemic cell mediated immunity is very important , what is not the same in vaginal candidosis.There is also different importance of innate resistency on both organs: smaller activity in vaginal mucosal, including anticandida activity of epithelial cells.The situation is quite different in gastrointestinal tract, where it could be demonstrated the importance of normal anaerobic microflora as antagonists on the candida growth, in the clinic as well in the experimental laboratory in continuos flow culture (5, 6).

So, our resultas should be regarded from the point of view of local as well systemic immunity of all mucosals, besides the presence of anaerobic microflora in gastrointestinal tract.High numbers of found candidas should be regarded also as change of local microflora but not as the clinical pathological entity, till is not documented by the presence of mycelial elements as the most important prove of pathogenicity, due to the present many virulence factors in yeast and nonexisting local or systemic factors in the host.The most of our results likely shoud be regarded as the commensal status of candidas, what is know in many situation in human pathology, when it could be changed in really pathogenic condition due to the non existing defence mechanism in the host.

Conclusion

From our investigations and the results of isolated candidas in diabetic clinical controlled patients, could be concluded:

1. Number of isolated colonies pro patients and the great number of negative isolation could be considered as the commensal flora in patients.
2. Not only high number pro specimens, but also smaller one, sould be carefully regarded as possible cause of complications, due to altered immunologic or local status on the mucosals and frequent controlled.
3. Isolated candida species are in accordance with other authors, that yeast-candida flora in all investigated specimens is changing, so that C.albicans allthough very frequent is not only one pathogen to be take in account as possible pathological agents.

Apstrakt:
KVASNICE U KLINIČKI TRETIRANIH DIJABETIČARA
Istraživana je frekvencija i zastupljenost sojeva kandida iz briseva fecesa, usne i vaginalne šupljine dijabetičara Klinike za endokrinologiju KCU Sarajevo.
Od 536 uzoraka fecesa (brisevi) pozitivnih je utvrđeno 69 (7,88%), od kojih je u skupini od 10-30 kolonija bilo najviše (47% i 17,64%), ali je bilo uzoraka sa 100 i više do 1000 kolonija u uzorku u 33,28%, 17,64% i 17,64%.Najčešće izolirana kvasnica bila je C.albicans (66,17%), a non albicans u 33,35%.Uz C.albicans izolirane su i C.lusitaniae, C.kefyr, C.tropicalis, C.parapsilosis i G.candidum.
Od 676 uzoraka briseva usne šupljine utvrđeno je 37,85% pozitivnih na kvasnice.Najviše pozitivnih nalaza bilo je u skupini od 10 kolonija (36,42%), a najmanje u skupini od 30-100 kolonija (25,25% i 24,70%).Više od 100 do 1000 kolonija izolirano je u 15,70% uzoraka.Izolirane kvasnice su bile: C.albicans (86,73%), te još i C.tropicalis, C.lusitaniae, C.kefyr, C.glabrata, C.parapsilosis i G.candidum.
Od 518 uzoraka vaginalnih briseva kandide su izolirane u 25,72% uzoraka i frekvencija izolata prema broju kolonija kretala se u skupini od 30 do 100 kolonija 16,98% i 20,25%, dok je u skupinama od 100 do 1000 kolonija iznosila 28,30%.C.albicans je bila zastupljena u vaginalnim brisevima 77,72%, a non albicans u 27,35% izolata (C.tropicalis, C.glabrata, C.parapsilosis i C.famata.
Autori raspravljaju o značenju nalaza kvasnica u dijabetičara sa stanovišta komenzalizma, odnosno patogenog infektivnog statusa u pacijenata.
Ključne riječi: kvasnice, dijabetičari

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