Isolation of Candida species from normal individuals in Hilla-Iraq

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Abstract
A total of 186 of normal individuals (F (143), M (43)), their ages ranged from 6 months to 75 years, was investigated for the presence of Candida species in the mouth, stool, as well as genital and high vaginal regions. The oral carriage of Candida species was found 31 out of 100 individuals (M (44), F (66)), in comparison to that found in the patients in the hospital ward on prolonged antibiotic therapy was 41.7% (10 out of 24 patients). The most prevalent isolated species of Candida from oral cavity of normal individuals was Candida albicans 17 (54.8%). Out of 31, Candida tropicalis 10 (32.3%), Candida Kefyer 3 (9.6%), and 1 (3.3%) Candida gullieromondii.

60% (30 out of 50) of the investigated females whose ages ranged from 29-40 years were found to carry Candida species in their external genital area, and 50% (9 out of 18) on high vaginal swabs. As well as Candida species was isolated from the stool of persons aged from 4 months to 60 years in 33.4% (6 out of 18 samples).

Introduction
Candidiasis is a World-wide distributed in nature [1]. Colonization of the gastrointestinal and genitourinary tract of man with Candida albicans or another species may occur during birth directly from the birth canal, [2] at some time during infancy or perhaps later in life, in which the source of Candida species may be environmental such as polluted fresh
will cause opportunistic infection in the presence of any of the predisposing factors like; diabetes mellitus, mal-nutrition [6], humidity, burn, HIV infection [7], renal failer, endocrine disturbance [8], pregnancy [9-11], oral contraception [12], cancer [12], indiscriminate usage of antibiotics [13], glucocorticoids and cytotoxic drugs [14]. The present study was done to find the percentage of carriage of Candida species in different anatomical sites of normal people in Hilla to be a base line for further studies.

**Material and Methods**

Swabs of oral, genital, high vagina sites and stool were collected from 186 normal persons, their ages ranged from (6months to 75years). The swabs were inoculated on brain heart infusion broth and incubated aerobically at 35°C for (1-2days), or until there is visible growth. From inoculated brain heart infusion broth that shows visible growth. Inoculation was performed on Sabouraud’s dextrose agar containing chloramphenicol 16Mg/ml and penicillin 20U/ml and inoculated aerobically for (1-2days), if there was no growth; it was examined after one week or more. Then the germ tube formation test and biochemical tests had been done for species identification.

**Results**

The oral carriage of Candida species were assessed in 100 patient’s age between (0.5-64years), 44 males and 66females, thirty one isolates. Table (1) shows the number and percentage of all the Candida species that had been identified from 31 oral swabs; 17(54.8%) were *Candida albicans*, 10(32.3%) *Candida tropicalis*, 3 (9.6%) of *Candida kfyre*, and only one case (3.3%) *Candida gullieronomodii* were isolated. In comparison to 24 oral swabs from the patient {in hospital ward on prolonged antibiotic therapy, there ages were (0.5-75years), (6females and 18males)}, were found positive in 10patients (41.7%). Swabs from the external genital area were also investigated in 50females, their ages ranged from 29-40years, 30 (60%) were found positive. From the high vaginal swabs 9(50%) were found positive ,the 18females ages ranged from 23-45years. Stool examination for the presence of Candida species were found positive in 6(33.4%) out of 18 persons, ages ranged from 4months to 60years, equal number from both sexes.

<table>
<thead>
<tr>
<th>The type of Candida species</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>C. albicans</em></td>
<td>17</td>
<td>54.8</td>
</tr>
<tr>
<td><em>C. tropicalis</em></td>
<td>10</td>
<td>32.3</td>
</tr>
<tr>
<td><em>C. kfyre</em></td>
<td>3</td>
<td>9.6</td>
</tr>
<tr>
<td><em>C. gullieronomodii</em></td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 1 The number and percentage of different Species of Candida isolated from the mouth of normal individuals.
Table 2 Shows the number and percentage of positive swabs in different regions of the body.

<table>
<thead>
<tr>
<th>Age/years</th>
<th>Region</th>
<th>Swab +Ve out of</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5-64</td>
<td>Mouth</td>
<td>31 (100)</td>
<td>31</td>
</tr>
<tr>
<td>29-44</td>
<td>External genitalia</td>
<td>30(50)</td>
<td>60</td>
</tr>
<tr>
<td>23-45</td>
<td>High vaginal</td>
<td>9(18)</td>
<td>50</td>
</tr>
<tr>
<td>0.3-60</td>
<td>Stool</td>
<td>6(18)</td>
<td>33.4</td>
</tr>
</tbody>
</table>

**Discussion**

Odds found in his study that 15% of normal subjects carry yeasts in their mouth, from which 10% was *Candida albicans*, while in hospitalized patients he found higher number, nearly 24% for yeast carriage and just fewer than 15% for *Candida albicans* [15].

The healthy vagina may be colonized by yeasts most commonly *Candida albicans*, and some times Candida glabrata, but only in a minority of women. The percentage of vaginal carriers differs widely in different survey, but a figure of 10% for yeasts and 7-8% for *Candida albicans* is probably accurate [16]. Higher rates are found in hospitalized patients even with out vaginal disease. Pregnancy, and oral contraception, intrauterine device, diabetes and antibiotic therapies might elevate this carriage due to changing in the activity of *lactobacillus species* that change PH of this region to be a good media for growth of *Candida albicans* [10,15].

**References**

6- Conlon C.P.and Snydoman D.R. ,2000, Microbes, the host and sepsis. Infectious diseases Mosby s’ color atlas and text; 2.
10-Sobel J.D. (1982). Recurrent Candida vaginitis is a rational approach to therapy