Prevalence of vulvovaginal candidiasis among female patients attending New Life Hospital Mubi, Adamawa State

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Abstract: This research project was undertaken to determine the prevalence of Vulvovaginal candidiasis in female patients attending New Life Hospital Mubi. About 100 samples were collected from the female patients and were grouped into four (4) according to their age groups viz: 18-23, 24-29, 30-35 and 36-above. One hundred endo cervical swab samples obtained from the 100 female patients in New Life Hospital were analyzed. The samples were cultured on Saboroud Dextrose Agar (SDA) and identification was done by microscopy, gram stain, and germ tube test. Out of the 58 yeast isolates obtained, 34 (58.62%) were identified as Candida albicans, while 24 (41.38%) were identified as Candida tropicalis. The age group 36 and above had the highest infection rate (81.8%), while the age group 18-23 had the least infection rate (53.9%). The results obtained showed that the higher the age, the higher the rate of infection, and the higher the age also, the lower the occurrence of Candida species.
Keywords: Candida albicans, Candida tropicalis, females, patients, vulvovaginal candidiasis.

I. INTRODUCTION
Urinary tract infection (UTI) is a serious health problem affecting millions of people each year. UTI has become one of the most common hospital acquired infection and account for a significant part of the workload in clinical microbiology laboratories (Akortha et al., 2009). Despite impressive advances in the understanding of the pathogenesis, diagnosis and treatment of urinary tract infections (UTIs), the infections still remain a major clinical problem. Many consultations in general practices are because of urinary infections (Akortha et al., 2009). Different microorganisms are implicated in UTIs. Although, bacteria remain the most important microbial agents of UTIs, Candida species are increasingly becoming important as causative agents of UTIs (Marie and Suzane, 2006). One of the primary UTIs caused by Candida species is vulvovaginal candidiasis. Vulvovaginal Candidiasis (VVC) is a very common condition and most women will experience at least one episode during their reproductive years (Pappas, 2006).

There are two factors responsible for women experiencing recurrences. It may be due to re-infection either from a sexual partner or reservoir of yeast in the gut; or a vaginal relapse due to incomplete eradication of the yeast (Sobel, 1999a).

Vulvovaginal Candidiasis (VVC) consists of an inflammation of the vulva and vagina. It can be caused by variety of Candida species, but it is most frequently caused by C. albicans (Pappas, 2006; Sobel, 1999b). Candida albicans seems to be a commensal pathogen in the vagina and changes in the host vagina environment are usually necessary before the organism induces pathological effect. In the majority of cases, a precipitating factor can be identified to symptomatic vaginates (Sobel, 1999a).

Candidiasis commonly called yeast infection is a fungal infection (mycosis) by any of the Candida species (James and Berger, 2006). Candida albicans is however the most common (Walsh and Dixon, 1996). Candidiasis encompasses infection that range from superficial such as oral thrush and vaginitis, to systemic and potentially life threatening disease. Candida species are normally found as part of the microbiota of the female genital tract but can cause UTI if the conditions in the genital tract are altered (Elicia, 2003). The factors which alter the conditions of the genital tract include prolonged use of antibiotics, use of contraceptives, pregnancy, frequent sexual activity and underlying diseases such as diabetes and cancer (Elicia, 2003). Vulvovaginal candidiasis is a common problem in women. About 70% of the female population suffers at least one episode of vulvovaginal candidiasis in their life time (Elicia, 2003). Two categories of vulvovaginal candidiasis are usually seen in clinical practice, the asymptomatic carriers and those who have symptomatic disease characterized by itching, burning irritation, soreness, discharge and vaginal pruritis (Eckert et al., 1998). VVC can also be classified as episodic or complicated. Episodic (recurrent) infection refer to cases where women have mild to moderate symptoms and have four or more attacks of VVC in a year. Complicated VVC on the other hand refers to persistent non Candida albicans infections, recurrent VVC and those with underlying host abnormality.
Despite impressive advances in the understanding of the pathogenesis, diagnosis and treatment of urinary tract infections (UTIs), these infections still remain a major clinical problem. The prevalence and importance of Candida specie in UTIs has not been investigated especially in Mubi, Adamawa state. Therefore, this study intends to determine the role of age on Candida albicans prevalence among patients attending New Life Hospital in Mubi, Nigeria.

II. MATERIALS AND METHODS

Study area
The study area is Mubi, a town which comprises of Mubi North and Mubi South local Government areas of Adamawa State. Mubi is located in the North Eastern region of Nigeria between latitude 10º 14’ N and 10º 18’ N of the equator and longitude 13º 14’ E and 13º 19’ E of the Greenwich Meridian. It occupies a land of about 725.85 km² with an estimated population of about 300,000 people. The area has tropical climate with an average temperature of 32°C and lies within the Sudan Savannah vegetation zone of Nigeria. The area has an average relative humidity from 28% - 45% and annual rainfall of about 1056 mm (Adebayo and Tukur, 1999).

Sample collection
Endocervical Swab (ECS) samples were collected by the laboratory scientist in New Life Hospital using a sterile swab stick, and were kept for analysis under favorable laboratory conditions. The samples were analyzed by culture on Saborand Dextrose Agar (SDA), microscopy (wet preparation), gram staining, germ tube test and sugar assimilation.

Preparation of media
Saborand Dextrose Agar was used for this study. Appropriate quantities of SDA powder was weighed and transferred into a conical flask and distilled water was added to the powder to dissolve it. The mixture was swirled to mix and sterilized at 121°C for 15minutes. After sterilization, the media was allowed to cool to about 45-47°C and then 20ml was dispensed into plates and allowed to solidify.

Culture
The swab stick was used to make an inoculum pool on the SDA plate and sterilized wire loop was used to make streaks. The inoculated plates were incubated at 35 – 37°C for 24 – 48 hours (they were incubated for 48 hours if there was no growth after 24 hours). A positive plate shows a cream colour pasty colony with a distinctive yeast smell.

Germ tube test
Germ tube test was carried out to confirm Candida albicans. 0.5ml of human serum was pipetted into a small test tube and a sterile wire loop was used to inoculate the serum with a yeast colony from the culture plate. The tube was placed in water bath or incubator at 35-37°C. After 2-3 hours, using a Pasteur pipette, a drop of the serum yeast culture was transferred to a glass slide and covered with a cover slip. The preparation was examined using the X10 and X40 objective lens of microscope. The appearance of sprouting yeast cells (tube like out growth from the cells known as germ tube) indicated a positive test. Thus, when sprouting yeast cell are seen, the culture was reported as yeast other than Candida albicans (Cheesbrough, 2006).

III. RESULTS

Candida species distribution among patients
Out of the total of 100 endocervical swab (ECS) samples collected, 58 yielded growths of yeast isolates. Candida albicans 34 (58.62%) was the highest and the least was Candida tropicalis 24 (41.38%) (Table 1).

Distribution pattern of yeast isolates in the different age groups.
Table 2 shows the distribution pattern of yeast isolates among the female age groups. The age group 36 and above had the highest rate of infection by Candida species 9(81.8%), while the age group 18 – 23 age had the least 21 (53.9%).

Occurrence of Candida species in varying age group
The age group 18 – 23 recorded the highest (38.2%) C albicans occurrence followed by age group 24 – 29 (29.4%). The least was age group 36 and above which recorded 14.7%. Similar pattern was shown for C. tropicalis. Age group 18 – 23 recorded the highest (36.21%), followed by age group 24 – 29 (31.03%). The least was age group 36 and above which recorded (15.52%) as shown in Table 3.

Table 1: Candida species in endocervical swab samples of female patients visiting New Life Hospital, Mubi.

<table>
<thead>
<tr>
<th>Species</th>
<th>No. of Positive ECS Samples</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candida albicans</td>
<td>34</td>
<td>58.62%</td>
</tr>
<tr>
<td>Candida tropicalis</td>
<td>24</td>
<td>41.38%</td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>100%</td>
</tr>
</tbody>
</table>
Table 2: Distribution of yeast isolates and infection rate of Candida species in different age groups.

<table>
<thead>
<tr>
<th>S/N</th>
<th>AGE GROUP</th>
<th>NUMBER SAMPLED</th>
<th>NUMBER POSITIVE</th>
<th>INFECTION RATE (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>18 – 23</td>
<td>39</td>
<td>21</td>
<td>53.9%</td>
</tr>
<tr>
<td>2.</td>
<td>24 – 29</td>
<td>32</td>
<td>18</td>
<td>56.3%</td>
</tr>
<tr>
<td>3.</td>
<td>30 – 35</td>
<td>18</td>
<td>10</td>
<td>55.6%</td>
</tr>
<tr>
<td>4.</td>
<td>36 and above</td>
<td>11</td>
<td>9</td>
<td>81.8%</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>100</td>
<td>58</td>
<td>58%</td>
</tr>
</tbody>
</table>

Table 3: Occurrence of Candida species based on age.

<table>
<thead>
<tr>
<th>S/N</th>
<th>AGE GROUP</th>
<th>C. albicans</th>
<th>C. tropicalis</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>18 – 23</td>
<td>13</td>
<td>8</td>
<td>21</td>
</tr>
<tr>
<td>2.</td>
<td>24 – 29</td>
<td>10</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>3.</td>
<td>30 – 35</td>
<td>6</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>4.</td>
<td>36 and above</td>
<td>5</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>34</td>
<td>24</td>
<td>58</td>
</tr>
</tbody>
</table>

IV. DISCUSSION

In Table 1, the number of positive ECS samples among Candida spp (C. albicans and C. tropicalis) was shown. C. albicans had the highest 34(58.62%) of the 58 total ECS samples tested, while C. tropicalis had least 24(41.38%). This finding agrees with Eckert et al (1998), Otero and Elegba (1998), Holland et al (2003), and Marie and Suzane (2006), where the frequency of C. albicans varies between 45% and 90%.

Out of the total (100) samples collected, the distribution of yeast isolates positively tested were seen most in the age group 18-23, followed by the age group 24-29 and the least was recorded in age group 36 and above, in the following order: 18-23 (21) > 24-29 (18) > 30-35 (10) > 36 and above (9) as shown in Table 2. This shows that as the age increases, the number of positive yeast isolate decreases. But the rate of infection among the age group appeared to be higher (81.8%) in 36 and above. This could be that as the age increases, the rate of infection also decreases, and this may be due to increased parity (number of children). This was evident in the age group 18-23 where it recorded the least (53.9%) infection rate.

In the aspect of occurrence of Candida spp in varying age groups among the female patients, C. albicans and C. tropicalis had the same trend of occurrence with age groups 18-23 taking the highest occurrence of 38.2% and 33.3% for C. albicans and C. tropicalis respectively, and with age group 36 and above as the least. The result also showed that Candida spp among the female patients significantly decreased with increased age. This indicates that the higher the age, the lesser the occurrence. The order of occurrence among the varying age groups is as follows: 18-23 (36.21%) > 24-29 (31.03%) > 30-35 (17.24%) > 36 and above (15.52%) as shown in Table 3.

V. CONCLUSION

From the results it can be concluded that there is high prevalence of vulvovaginal candidiasis in the female patients visiting New Life Hospital, Mubi especially those at the age group of 36 and above. This study therefore revealed that the higher the age, the higher the rate of infection, and the higher the age, the lower the occurrence of Candida species.

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REFERENCES