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An Assessment of Candidal Vulvovaganitis in Cohort of Saudi Healthy Women

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Four hundred nineteen vaginal swabs were obtained from childbearing healthy women seeking medication for vaginal itching, odor and discharges in outpatient gynecology clinic at Yamamah Hospital, Riyadh, Saudi Arabia. 23% of the swabs produced Candida on culturing. The distributions of the species were: for *Candida albicans,* 14%, *C. glabrata*, 5%. *C. krusie*, 3%, and 1%, for each of *C. famata*, *C. parapsilosis*, *C. kefyr* and *C. tropicalis*. The susceptibilities of *C. albicans, C. glabrata* and *C. krusie* against amphotericin B, itraconazole, flucoconazole and Ketoconazole were tested using E-test. *C. albicans* 4% were resistance to amphotericin B and 20% with reduced susceptibilities. *C. glabrata* showed 100% resistance to itraconazole and reduced susceptibilities to flucoconazole and Ketoconazole with only 80% susceptible to amphotericine B. According to the questionnaires, enduring infection may be a consequence of oral contraceptive and regular use of antifungal drugs.

Key words: Pregnent Women, *Candida* sp, Cohort Saudi Women, Infection, Susceptibility.

Isolation of *Candida* from vaginal swabs is a very frequent finding and 20% of healthy women harbor the organism in their vagina as a normal flora[1]. By contrast, the scourge of candidal vaginitis events claim over 70% of childbearing healthy women with half of them is having second episode and 5% refractory ones[2-4,8-10]. The global assessment for the transformation of colonization to infection has been addressed as a consequence of retarded defense mechanism due to higher estrogen level or partial elimination of the protective *Lactobacillus acidophilus*[26,27,37].

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There are over 150 species of *C andida*, however, those involved in gynecology are (in decreasing order) *C. albicans, C. glabrata, C. tropicalis, C. pseudotropicalis* and *C. krusie.* Species such as *C. parapsilosis* and *C. gultermondi* are rarely isolated[11,15,16]. In a conservative society like Saudi Arabia an interpretation of vaginal sensation as symptom requiring medical advice and attention may be delayed. Instead of going to the hospital for medical treatment, they sometimes tell their problems to relatives and friends and find a solution by themselves. However, in few cases in ideal response to the sensation is an opaque negotiation with physician which results in prescribing treatments. We sought to investigate vaginal candidosis regarding etiological and their response to antifungal drugs as prime target and the three problems plaque, induction, recurrent and refractory and its relation to the social status and backgrounds.

MATERIALS AND METHODS

Patients

Four hundred nineteen of childbearing healthy women who met criteria of having vulvovaginitis, with main complaints of itching, discharge, odour and uncomfortable marriage relations, had been enrolled for this investigation. The patients were seeking medication in out-patients gynecologic clinic at Yamamah Hospital in Riyadh, Saudi Arabia. The cohort was chosen to represent wide spectrum of ages and fertility. A sheet of questionnaires was handed over to each patient for stating, age, pregnancy, and number of children, time and frequency of episodes, use of contraceptive and antibiotic drugs. Soon after the completion of questions patients were examined and upper vaginal swabs were taken in triplicates. One swab was submitted to the hospital laboratory and two were processed by the investigator for isolation and identification of causal organism. Isolation accomplished on colony were stained and examined for yeast characteristics morphology, purified and sub cultured monthly during the experimental period. Isolates were tested for the formation of germ tube and chlamydospores by the method of Larore, 1993. Those reacting positive to the test presumptively classified as *C. albicans.*

Final identification of isolates were achieved by the use of UPI 20c system (API System, Vercieu, France). Antifungal susceptibility of the isolates. The MICs of Fluconazole, Itraconazole, Ketoconazole and Amphotericin B were measured by E-test following the manufacturer instructions.

RESULTS

Four hundred twenty nine childbearing healthy women with age spectrum of 17-40 years and with the main complaints of vaginal discharge, itching and odor were clinically examined and diagnosed of having vulvovaginitis. The obtained swabs (in duplicates) were soon processed by the investigator at the reference laboratory for isolation and identification of causal organism.

Organisms

One hundred swabs produced *Candida* (23.3% of patients truly infected). The distribution of species were for, *C. albicans, C. glabrata, C. krusie, C. famata, C. parapsilosis, C. kefyr* and *C. tropicalis;* 74%, 19% 3% 1%, 1% 1% and 1% respectively. Clinical data questionnaires were completed for those showing positive swab cultures and shown in Table 1.

Table 1. Clinical data for 100 patients with *Vaginal candidiasis*

No. of patients (%)	Characteristic
24	Pregnancy
18	Regular users of antifungal drugs
17	On antibiotic course prior to infection
20	Using oral contraceptive
21	The frest episodes with unknown predisposing factors.

Antifungal susceptibilities

Seventy four *C. albicans,* nineteen *C. glabrata* and three *C. krusei* were analysed for susceptibilities to amphotericin B, flucoconazole, itraconazole and ketoconazole (Fig. 1 & 2). 4% of *C. albicans* were resistance to amphotericin B and around 20% showed reduced susceptibilities. Itraconnazole is not the drug of choice, since the MIC50 approaching the resistance level, >0.95ug/ml. Both flucoconazole and ketoconazole seem to be effective against *C. albicans* with MIC90 of >4 and 0.19 ug/ml respectively. *C. glabrata* seems to be the toughest organism with 20% resistance to amphotericin B, 100% to itraconzole and decreased susceptibilities to flucoconazole and ketoconazole. *C. krusie* could not be classified owing to the limited number of isolates obtained. However, three were enough to show the level of resistance.

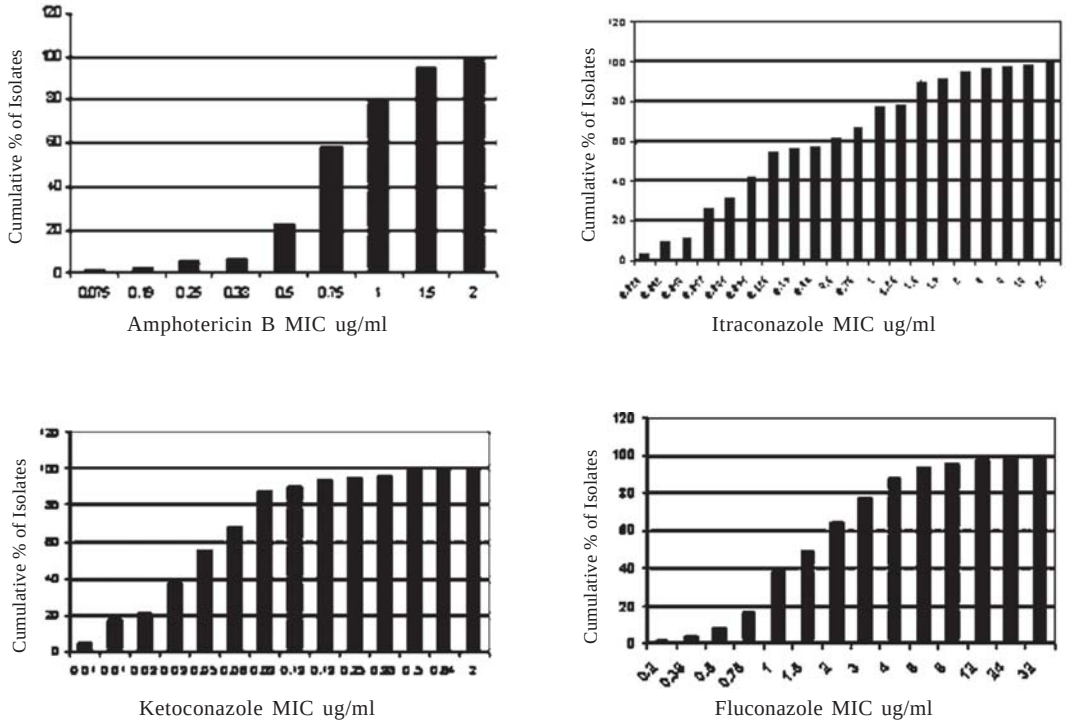

Fig. 1. Cumulative MICS of hour antibiotics against *C. albicans*

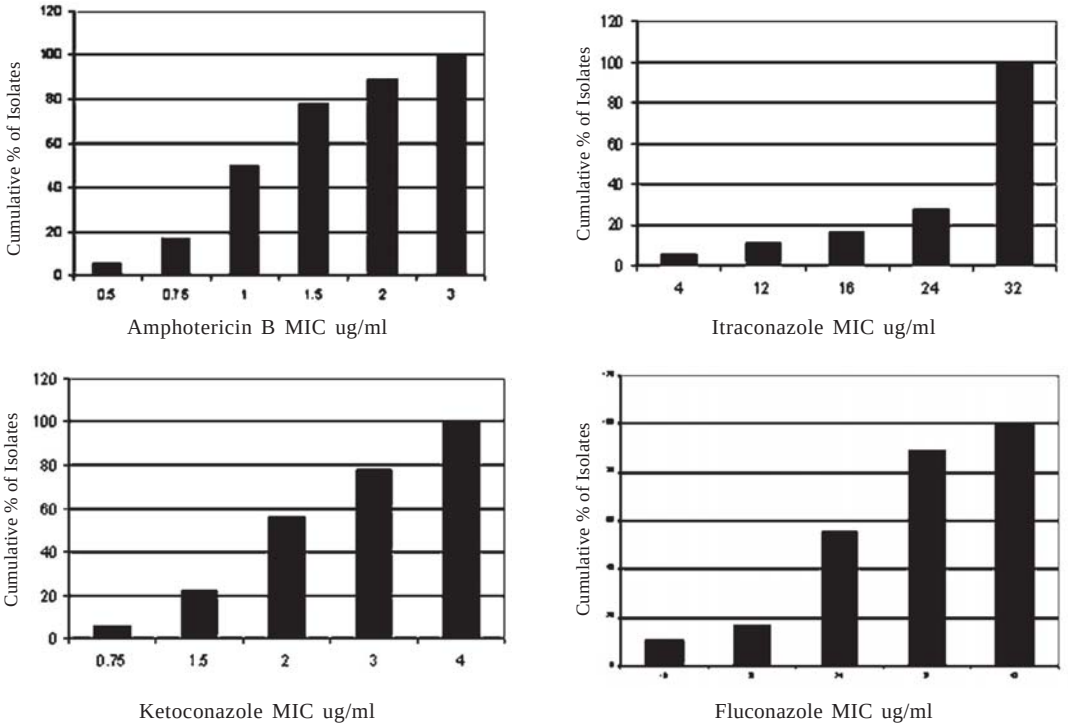

Fig.2: Cumulative MICS of four antibiotics against *C. glabrata.*

DISCUSSION

Vaginitis described as non-debilitating self-limited condition that is treated easily and effectively by antimicrobial drug (Sobel, 1997). The definition may be inadequate to count for the level of functional difficulties and other social and emotional sequel experienced by women. The evidence that vaginitis symptoms occur in normal population and not necessarily indicate the presence of disease seems to be true (Prestley *et al.* 1997, Schaaf *et al.* 1990). Since over 7% of the collected swabs found to be sterile, the impact of symptoms on the life-style and self image these women are not less than those diagnosed as infected patients and the physician has to meet the dilemma of whom to treat, certainly those really infected.

The findings in this study are somehow gloomy with 59% of the patients experiencing monthly episodes, however, the cause of enduring infection assumed to be the regular use of contraceptives and antibiotics. Those with recurrent episodes 30% are not better off and may be queuing for the worse and the same dilemma a waiting 20% having the first episode. The recurrent infection has been attributed to rectal contamination of the vagina and to some extent to *Lactobacillus* lytic or lyzognic phages.

Women have to learn the habit of what to eat, and wear as a hygiene measure to avoid the stress and anxiety implicated by vaginistis (a verbal remedy for those with unknown cause of vaginitis). Apart from the clinical manifestation are the susceptibilities of the candida species to the antifungal drugs. However, resistance or reduced susceptibilities of *Candida* species. To amphotericin B have been considered as uncommon observation (Germain *et al.*, 2001).

In this study we experienced both resistance and reduced susceptibilities of *C. labicans* to amphotericin B, therefore, we fear the culture in *C. albicans* treatment encouraged the sheft to azoles pathing the way for the emergence of *C. kruzy* and the frequent isolation of *C. glabarata*.

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REFERENCES

1. Sobel JD. Epidemiology and pathogenesis of recurrent vulvoginal candidiasis. *Am . J. Obstet Gynecol.* 1985.**152**: 924-935.
2. Hurley R. De Luvois. J. Candida vaginitis. Postrgrad. *Med. J.* 1979.**55**: 645-647.
3. Hurley R. Trends in candidal vaginitis. *Proc. R. Soc. Med.* 1977. **70** suppl. 4: 1-8.
4. Hurley R. Recurrent *candida* infection. *Clin. Obstet Gynecol.*1981. **8**: 209-213.
5. Denning DW, Evan EGB, Kibbler CC, Richardson MD, Roberts MM, Rogers TR Working group of the British Society for Medical Mycology. Management of genital candidiasis. *Br Med. J.* 1995; **310**: 1241-1244.
6. Fidel, P.L., Cutright. J. and Steel, C. Effect of reproductive hormones on experimental vaginal candidiasis. *Infect. Immun.*2000. **68** (2): 651-657.
7. Geiger AM, Foxman B., Sobel JD. Chronic vulvovaginal candidiasis: characteristics of women with *Candida albican, C. glabrata* and no *candida. Genitourin Med.*1975. **71**: 304-330..
8. Grilloot R. Mycoses genitals. Les mycoses humaines: demarche diagnostique. Elsevier, Paris, 1996. 116-124.
9. Kilic, A.O., Pavlova, S.I., Apaly, S., Kilie, S.S. and Toa, L. Comparative study of vaginal Lactobacillus Phages isolated from women in the United States and Turkey: Prevalence, Morphology, Host Range, and DNA Homology. *Clin. Diag. Lab.Immun.*2001. **8** (1): 31-39.
10. Moyal Barraco M. Candidosis vulvo. Vaginales recidivants. Manifestations cliniques, diagnostic mycologique, facteurs favorisants, traitement. *Reprod Hum Horm.*1996. **9**: 53-61.
11. Narayanan TK, Tao GR. Beta-indole-ethanol and betaindolel-acid production by *Candida* species: theirantibacterial and autoantibiotic action. *Antimicrob Agents Chemoter* 1995. **9**: 375-380.

12. Powell BL, Drutz Dl. Estrogen receptor in *Candida albicans,*1983. A possible explanation for hormonal influences in vaginal candidiasis. Twenty third Interscience Conference on Antimicrobial Agents and Chemotherapy. Abstract. 751-222.
13. Priestley, C., Jones, B., Dhar, J., and Goodwin, L. What is normal vagina flora? *Genitourinary medicine*, 1997; **73**: 23-28.
14. Schaaf, V., Perez-Stabile, E., and Borchardt, K. The limited value of symptoms and signs in the diagnosis of vaginal infection. *Archives of Internal Medicine,*1990. **150**, 1929-1933.
15. Sobel JD. Candida vulvogaginits. *Sem. Dermatol.*1996. **15**: 17-28.
16. Sobel, E. Vaginitis. N. Engl. *J. Med.*1997. **337**, 1896-1903.
17. Spinillo A, Capuzzo E. Egbe TO, Baltaro F. Nicola, S. Piazi G. Torulopsis glabrata vaginitis. *Obstet Gynecol,* 1995. **85**: 993-998.