CANDIDIASIS AS A CAUSE OF VULVO-VAGINITIS

by

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The incidence of candidiasis has increased in the past few decades and has become a medical problem of increasing magnitude. Treatment with antibiotics and/or cortisone is responsible to a great extent for this increase.

Although not a major disease, candida infection in the vagina is a definite nuisance to the patient. It is important from the point of view of leucorrhoea it causes in these patients and also other local manifestation and sometimes urinary tract infections. Candida albicans has been isolated from the vagina during reproductive age without having clinical symptoms. Under circumstances which alter host parasite relationship, clinical signs appear. Transmission from one person to another is less important than factors affecting the resistance of the host, although such factors are not fully understood at present. The infection seems to be endogenous in origin in most cases.

There are several factors that effect vaginal flora, such as, age, parity, condition of external genitalia amount of hormones produced by the ovaries, condition of vaginal epithelium and use of antibiotics and other drugs.

Vulvo-vaginal candidiasis is rare in normal prepubertal child and in postmenopausal period since during these periods of low estrogenic secretion the glycogen content of vaginal cells is at a low level. On the other hand, infection by candida albicans is common during pregnancy when the glycogen content of vaginal cells is at it's height.

Another point of interest in vaginal candida infection is that a parasite, trichomonas vaginalis causes a similar set of symptoms. Before introduction of antibiotics it was the foremost cause of vaginitis.

Many times trichomonas and candida infection occur simultaneously which makes it obligatory to culture the discharge even when trichomonas vaginalis is found in a hanging drop preparation.

Further, other yeast like organisms belonging to the genera cryptococcus and saccharomyces but having many features in common with candida have been iso-

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lated from the vagina. There the differentiation from candida is necessary.

A large number of authentic species of candida has been isolated. Diddens and Ledder (1942) studying the strains from all sources, recognized 25 species and 7 varieties. Since then many species have been described by Skineer and Fletcher (1960) isolated from various sources.

The present study was undertaken to find out the incidence of candidiasis in women in this region.

Material and Methods

Antenatal cases complaining of vaginal discharge were chosen from antenatal clinic. Patients with gynaecological diseases like sterility, cervicitis, pruritus vulvae complaining of vaginal discharge were selected from obstetric and gynaecology O. P. D. In these patients, parity, type of discharge and chief complaints were recorded.

Urine examination for sugar was done as a routine in all cases. Vaginal swabs were taken from posterior fornix or the lesion along the vaginal wall. In cases of vulvo-vaginitis, the applicator was also swept over inner and outer surface of labia minora and round the introitus. The swabs were immediately transferred to small bottles containing sterile normal saline.

The following method of study was used.

(1) Element of fungus was demonstrated in the wet and/or stained smear.

(2) Isolation and identification of the fungus was done on the following media and using standard procedures.

— Sabouraud's agar with chloromycetin.
— Blood agar.
— Sabouraud's broth.
— Rice infusion tween 80 agar.
— Carbohydrate media: glucose, maltose, sucrose, lactose and galactose.

Fermentation reactions were tested using glucose, maltose, sucrose, lactose and galactose.

Results

Total of one hundred and twenty-five cases were examined. Out of these, 83 cases were positive for candida.

Table I shows the relative incidence of species of candida isolated from 83 cases.

TABLE I

Incidence

S. No.	Candida species	Strains	Percentage
1.	Candida albicans	54	65.06
2.	Candida tropicalis	9	10.84
3.	Candida krusei	13	15.66
4.	Candida parakrusei	4	4.81
5.	Candida stellatoidea	3	3.61

Table II shows relative incidence of candida and trichomonas in vaginal discharge. Forty-two cases out of 125 were positive for trichomonas vaginitis.

TABLE II

Relative Incidence of Trichomonas and Candida

S. No.	Species	Strains	Percentage
1.	Candida	83	68.59
2.	Trichomonas	42	30.47

Table III shows relative incidence of candida species associated with trichomonas.

The importance of routine culture for candida isolation is obvious by the data

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TABLE III

Relative Incidence of Candida Species With Trichomonas

S. No.	Species	Strains	Percentage
1.	Trichomonas alone	22	52.38
2.	Trichomonas and C. albicans	10	23.80
3.	Trichomonas and C. tropicalis	4	9.52
4.	Trichomonas and C. krusei	6	14.28

presented in the Table IV. It shows the percentage of positive cultures, direct smears of which were negative for candida.

Table V shows the various strains of candida isolated.

TABLE IV

Relative Value of Smear and Culture

S. No.	Smear and wet preparation	Cases	Culture positive in these cases	Percentage
1.	Smears and wet preparation negative for candida from vaginal discharge	75	37	49.33

TABLE V

Strains of Candida Isolated by Different Workers

S. No.	Author	Cases	Incidence percentage	Remarks
1.	Purandare *et al.* (1962)	200	33.0	Symptomatic group.
2.	Dattachoudhary *et al.* (1962)	500	22.0	Symptomatic group.
3.	Velayudhan and Kurup (1963)	500	34.0	Unselected.
4.	Mansukhani *et al.* (1962)	100	45.0	Symptomatic group.
5.	Present series	121	68.59	Symptomatic group.

Species were identified by studying the characteristics of the fungus in Sabouraud's agar and broth. Production of mycelia and chlamydospores on special media like rice tween 80 agar and by fermentation reactions.

In our study of 125 cases highest incidence was that of Candida albicans, followed by Candida tropicalis, Candida parakruses and Candida stellatoidea.

Discussion

The incidence of vaginal candidiasis has been studied by many workers (Mansukhani *et al.*, 1961; Purandare *et al.*, 1962; Chowdhary *et al.*, 1962). The figures vary widely. In our series, the incidence was 68.59 per cent. The cause of this disparity in the incidence appears to be because of the selection of cases, in each study. The fungus occurs quite frequently in healthy individuals (asymptomatic) and mere isolation of candida from the vagina should not be taken as indication of infection. We had selected

TABLE VI

Incidence of Trichomonas and Candida Vaginitis

S. No.	Author	Cases	Candida per cent	Trichomonas per cent	Trichomonas and candida combined per cent
1.	Satyavathi (1954)	400 (Obst.)	35.0	38.1	3.0
2.	Mansukhani *et al.* (1961)	100 (Gynaec.)	45.0	36.0	6.06
3.	Purandare *et al.* (1962)	200 (Gynaec.)	33.0	20.0	0.0
4.	Velayudhan and Kurup (1963)	500 (Obst.)	34.8	20.4	6.8
5.	Present series	121 (90 Obst. & 31 Gynaec.)	68.59	30.47	16.52

symptomatic group complaining of vaginal discharge.

Table V gives the incidence of vaginal candidiasis as reported by other workers and compared to our studies.

Whenever profuse discharge was seen, the isolation of candida species was more. Thick curdy white discharge typical of candidial vaginitis was seen in 12 out of 125 cases. Eighteen out of 125 cases showed mycelia in the wet smear examination. Of the 90 pregnant women studied, 57 were positive for candidiasis. A higher incidence of candidiasis in multiparous women has been observed by many workers. Purandare *et al.* (1962) in their study of only gynaecological cases found a significantly higher incidence of vaginal candidiasis in multiparae (66.6 per cent) as compared to nulliparous women (30.5 per cent). On the contrary Clark and Salomon (1959) found no significant difference in the incidence.

In our series, in fairly good number of cases, candida and trichomonas infections have been found concurrently. Table II gives the incidence of candida and trichomonas vaginitis as reported by some workers and comparison with our series. Our results of mixed infection by candida and trichomonas vaginales are much higher as compared to other reports. The explanation for this may be that the majority of our cases were belonging to obstetric group in which the infection rate of candida species is always high. Majority of our patients attending the O. P. D. were of poor socio-economic class. Poor mode of living and poor perineal hygiene of these patients might also be responsible for the difference.

Though candida albicans is the commonest of the candida species causing vulvo-vaginitis, other species are also often responsible for the condition in demonstrating the role of candida species in causing clinical lesions. Haussmann in 1869 (quoted by Carter *et al.*, 1959) successfully produced mycotic vulvo-vaginitis by inoculating the vagina of a patient with the thrush fungus oidium albicans. Hasseltine and Campbell (1938) produced evidence of pathogenecity of candida albicans for vaginal mycosis and it's relationship to oral thrush of new

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born. Haley (1961) however, stated that candida tropicalis and to a lesser extent candida krusei and candida parakrusei were found to be pathogenic. The isolation of various species of candida from symptomatic group emphasizes Haley's view.

Summary

A mycological study was undertaken in Obstetric and Gynaecological cases to evaluate the relative incidence of candida species in various age groups associated with clinical symptoms. Amongst the various species of candida isolated, the highest incidence was that of candida albicans, followed by candida tropicalis, candida parakrusei and candida stellatoidea. Candida and trichomonas infection occurred concurrently in 16.52 per cent of the cases. For clamyedospores and mycelia production Rice infusion tween 80 agar was found to be satisfactory and inexpensive.

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