

CANDIDA IN THE FEMALE GENITAL TRACT

by

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SUMMARY

Increased incidence of vaginal candidiasis was detected during the reproductive life, i.e., 21-30 years (74.2%).

Candida infection in pregnant women showed a direct relationship with parity and period of gestation. It was highest in multiparous women (73.8%) and during the IIIrd trimester of pregnancy (57.1%).

Culture of vaginal swabs for isolation of candida proved to be a superior method in detecting the vaginal candidiasis as compared to smear examination.

The predominant species isolated was *C. albicans* (57.15%) followed by *C. krusei* (12.95%), *C. stellatoideae* (10.45%), *C. tropicalis* (9.0%). The remaining 10.45% could not be classified with the conventional methods studied.

Introduction

Candida infection of the female genital tract is one of the commonest causes of vaginal discharge. This often poses a problem to clinician as well as to patient unless it is diagnosed early and treated effectively.

The candida species has also been isolated from the vagina during reproductive age without having clinical symptoms (Hesseltine *et al* 1934) and this further enhances the problem to distinguish the commensal nature of the organism from that of its pathogenic role. The indiscriminate use of local antibiotics, contra-

ceptive pills and jellies has resulted in an increase in the incidence of vaginal candidiasis (Purandare *et al* 1962). Several factors such as age, parity and conditions of the external genitalia affect the incidence of vaginal candidiasis (Sen Gupta *et al* 1975).

With this background in view, the present study was under taken to know the incidence of vaginal candidiasis and its relation to age, parity, period of gestation and other microbial flora found along with candida.

Material and Methods

Vaginal swabs were collected from 300 women attending the antenatal and gynaecology out-patient department of the

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Government Maternity Hospital, Hyderabad, during the year 1979-81.

Three swabs were collected from each patient and were sent immediately to the laboratory.

Direct Examination: One swab was used to study for smear examination by Gram's method for evidence of yeast like organisms.

The second swab was inoculated on a Blood agar and a Mac-Conkey agar plate, to isolate pyogenic organisms.

The third swab was inoculated on a Sabouraud's medium containing 1% chloramphenicol. The isolates were identified and detection was done by the following tests using conventional methods.

(a) Biochemical fermentation, (b) Carbohydrate assimilation, (c) Colour change in the medium with tetrazolium chloride, (d) Germ tube production, (e) Chlamydo-spore production.

Observation and Discussion

The presence of candida in the Vagina as a normal commensal has been well documented (Hesseltine *et al* 1934) and hence it is hard to attach any importance to mere isolation of candida. However, isolation of candida accompanied by pro-

fuse discharge deserves proper attention and the patient should be treated.

Many workers have studied the incidence of vulvo-vaginal candidiasis (Kapoor, 1972; Sen Gupta *et al* 1975; Annapurna *et al* 1980). The figures varied widely from .22% to 68%. This wide variation in the incidence of candida infection may be due to random selection of cases, poor hygiene and socio-economic status of patients.

The present study has revealed an overall incidence of candida infection as 25.6% (Table I).

Out of 100 symptomatic pregnant cases in this series, 39 (39%) were positive for candida infection, which corresponds to 39.6% reported by Menon and Jehan (1960), 35% by Mhatre (1977).

Of the 150 symptomatic non-pregnant women, 34 (22.6%) were positive for candida. Similar results were published by Nandan Singh (1972) 23.3%.

A definite correlation has been also established between age and the incidence of vaginal candidiasis. In this study maximum affected age group was 21-30 years with an incidence of 74.2% (Table II). Our results corresponds to reports published by Annapurna *et al* (1980).

TABLE I
Analysis of 300 Cases

Status	Pregnant		Non-pregnant		Total	
	No. examined	No. positive for candida %	No. examined	No. positive for candida %	No. examined	No. positive for candida %
Symptomatic	100	39 (39)	150	34 (22.6)	250	73 (29.2)
Asymptomatic	27	3 (11.1)	23	1 (4.3)	50	4 (8.0)
	127	42 (33.3)	173	35 (20.2)	300	77 (25.6)

TABLE II
Distribution of 77 Candida Positive Cases in Relation to Age

Status	No. of cases	15-20 yrs.	21-30 yrs.	31-40 yrs.	41-50 yrs.
		%	%	%	%
Symptomatic	73	7 (9.6)	54 (73.9)	11 (15.1)	1 (1.4)
Asymptomatic	4	—	3 (75)	1 (25)	—
		7	57	12	1
Total	77	(9.09)	(74.2)	(15.6)	(1.3)

Vaginal candidiasis during pregnancy also revealed a direct relationship to parity and period of gestation. The highest incidence in the present study was found in multiparous women (73.8%) and in IIIrd trimester (57.1%) (Table III). Similar results were published by (Grewal *et al* 1974; Annapurna *et al* 1980).

Plass *et al* (1931) explained the incidence in multiparous women by the fact that repeated pregnancies with trauma of parturition somehow make the lax perineal tissue more vulnerable to fungal infection. The highest incidence in the IIIrd trimester may be explained by the fact that the peak of the acid pH is attained during the last trimester as a result of maximum glycogen concentration.

Culture of the vaginal swabs for isola-

tion of candida proved to be a superior method in detecting the vaginal candidiasis as compared to examination of wet film or stained smear by the fact that 18% of the cases which were smear negative turned out to be positive on culture (Table IV).

Of the 77 candida isolates in the present study, 57.15% were *C. albicans*, followed by *C. krusei* 12.95%, *C. stellatoideae* 10.45%, *C. tropicalis* 9.0% and 10.45% of candida isolates could not be classified because of their inconsistent biochemical reactions. The main species involved in vaginal candidiasis was found to be *C. albicans* in our study. (Table V). Similar results were also published by Grewal *et al* (1974), Sen Gupta *et al* (1975), Annapurna *et al* (1980).

TABLE III
Analysis of 42 Positive Cases in Relation to Parity and Period of Gestation

Status	No. of cases	Parity		Period of Gestation		
		Prim. %	Multi. %	I Tri-mester %	II Tri-mester %	III Tri-mester %
Symptomatic	39	11 (28.2)	28 (71.8)	7 (17.9)	10 (25.6)	22 (56.5)
Asymptomatic	3	—	3 (100.0)	—	1 (33.3)	2 (66.7)
Total	42	11 (26.2)	31 (73.8)	7 (16.7)	11 (26.2)	24 (57.1)

TABLE IV
Relation Between Smear and Culture Examination for *Candida* in 300 Cases

Type of patient	No. of cases	Smear positive and culture	Smear negative and culture	Smear and culture
		positive %	positive %	negative %
Symptomatic	250	21 (8.4)	52 (20.8)	177 (70.8)
Asymptomatic	50	—	4 (8.0)	46 (92.0)
Total	300	21 (7)	56 (18.7)	223 (74.3)

TABLE V
Incidence of *Candida* Species Isolated from 77 Yeast Like Organisms

Name of the candida species	No. of isolates	Percentage
<i>C. albicans</i>	44	57.15
<i>C. krusei</i>	10	12.95
<i>C. stellatoideae</i>	8	10.45
<i>C. tropicalis</i>	7	9.0
Unidentified candida	8	10.45

TABLE VI
Comparison of Incidence of Vaginal Candidiasis

Authors		Percentage of incidence of candidiasis	
		Pregnant	Non-pregnant
Campbell and Parrot	(1950)	40	20
Menon	(1959)	34.2	22
Das and Sen	(1967)	35.0	26
Grewal <i>et al.</i>	(1974)	52	—
Mhatre <i>et al.</i>	(1977)	35	16
Menon and Jehan	(1960)	39.6	—
Nandan Singh	(1972)	—	23.3
Present series		39.0	22.6

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