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Original Research Article

IDENTIFICATION OF MICROBIOLOGICAL PROFILE OF LEUCORRHOEA IN REPRODUCTIVE AGE GROUP

[a]Dr.NISHAT AFROZE*, [b]Dr.MOHAMMAD IBRAHIM.SHAIK, [c]Dr.SHAIK JAFFAR

[a]Dept of Gynecology and Obstetrics, Deccan college of Medical Sciences. Hyderabad
[b]Department of Biochemistry, Shadan Institute of Medical Sciences,Hyderabad
[c]Department of Biochemistry, Acharya Nagarjuna University, Guntur.

Author for Correspondence: shaikjaffar2008@yahoo.com

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ABSTRACT

Leucorrhoea or vaginal discharge is one of the very common problems or complaints among females of reproductive age group (15 yrs. - 45yrs.) attending to Gynaecology and Veneriology outpatient department .Leucorrhoea or vaginal discharge constitute a considerable problem for many women causing discomfort, anxiety affecting women's quality of life and consuming considerable resources. The aim of the present study to isolation, identification and to assess the frequency of occurrence of various microbial agents in patients with leucorrhoea attending to Gynaecology,obstetrics and Veneriology, outpatient departments in Owisi Hospital, Hyderabad. This study helps to assess the role of microorganisms in causation of leucorrhoeas. It helps the clinician to give proper treatment and better patient care in this era of antibiotic resistance and immuno deficiency.

Key words: Leucorrhoea, Gynaecology, Candida, Gardenella vaginalis.

INTRODUCTION

Leucorrhoea or vaginal discharge is one of the very common problems or complaints among females of reproductive age group (15 yrs.- 45yrs.) attending to Gynaecology and Veneriology outpatient departments. Reproductive tract infections (RTI) including sexually transmitted infections (STI) have been recognized as major health problem in India, after introduction of Reproductive and Child Health program (RCH) in October 1997. National family health survey -2, reported 39.2% of women in India having one or more infections.[1] Most of the women attending to Gynaecology (50%) and Veneriology(30%) outpatient departments are suffering from infection of vagina with vaginal discharge, is the common presenting complaint. Leucorrhoeas are physiological and pathological. Physiological leucorrheoas can vary with age, use of contraceptives, menstrual cycle and with the oestrogen level. Pathological Leucorrhoea means- running of white substance and the term should be restricted to mean, an excessive amount of normal discharge, if it dries to leave a brownish yellow stain on clothing.[2] Leucorrhoea is white discharge where the vaginal discharge is excessive associated with or without any obvious local pathology. Excessive vaginal discharge is white, purulent, yellow or watery but not blood stained is termed as leucorrhoea. The vaginal flora is a dynamic ecosystem that can be easily altered. The vagina, ectocervix and endocervix are susceptible to various pathogens depending upon the type of epithelium present and other factors in the microenvironment. The squamous epithelium of the vagina is susceptible to infections with candida species, trichomoas vaginalis and Gardnerella vaginalis.[3] There are three causes of pathological vaginal discharges which cover 95% of cases. These are bacterial vaginosis, candidial vulvovaginitis, trichomoniasis. Bacterial vaginosis is not caused by a single pathogen; it is a poly microbial clinical syndrome.[4] Bacterial vaginosis is termed vaginosis rather than vaginitis, because it is associated with alteration in normal vaginal flora rather than due to any specific inflammation.

MATERIALS AND METHODS

The present study included 125 women attending to outpatient departments of Gynaecology, Obstetrics & Veneriology, Owaisi Hospital, Hyderabad with the compliant of vaginal discharge for one week or more duration with or without associated vaginal discomfort like pruritis and burning micturition.

125 Samples were collected from patients in reproductive age group. Out of them 80 samples were collected from Gynaecology,

30 samples were collected from Veneriology, and 15 samples were collected from antenatal women with bad Obstetric history, who were attending to outpatient departments, Owasis Hospital, Hyderabad for a period of 15 months from June 2012 to August 2013.

Inclusion Criteria:

Patients of reproductive age group who attended Gynaecology, Obstetric and Veneriologyout patient with leucorrhoea having discomfort like pruritis and dysuria.

A detailed obstetric & Gynaec history was taken from all these women along with general history of diabetes, hypertension, H/o contraception.

Local examination of the genitalia without any antiseptic lubricant has been carried out.

Exclusion criteria:

1. Patients on antibiotic treatment.
2. Patients who had genital prolapse.
3. Malignancy of genital tract were excluded from the study.

Method of sample collection

Vaginal pH : Vaginal pH wasrecorded by using pH strips (Indikrom papers) with in a range of pH 2.0 - 10.5 from the midlateral vaginal wall. Three high vaginal swabs were collected with sterile cotton swabs from the posterior fornix with the help of the sterile sim's speculum (Mackie & McCartney 1996) and transported to the Microbiology laboratory in Amie's transport medium.

Whiff test: (Amine test) was performed by the addition of 2 drops of 10% KOH to vaginal fluid collected on the speculum and enhanced fishy odor was noticed and taken as positive test.

The negative value of 99% provided good screen for the absence of Bacterial vaginosis (Colour Atlas & Text book of diagnostic Microbiology).[18]

The samples were processed in the department of Microbiology laboratory, Deccan Medical College, Hyderabad within one hour of collection.

Laboratory tests for microbial identification:

1. Microscopic examination

i. Saline wet mount & 10% KOH mount

ii. Grams staining.

2. Isolation by culture

Specimen inoculation on culture media.

1. Microscopic Examination:

i. Saline Wet Mount: It was prepared on a clean with one vaginal swab with one drop of normal saline and covered with clean cover slip. The preparation was examined under low power and then high power objective for the presence of the following :

1. Motile pear shaped trichomonads. These flagellated trophozotes are larger than white blood cells under 40x objective.
2. Clue cells were identified as large vaginal squamous epithelial cells studded with large number of Gram negative

organisms and the cell borders were ill defined.

3. Motile curved rods, (mobiluncus)

4. Pus cells

ii. 10% KOH mount preparation:

One drop of 10% KOH was added to the drop of vaginal secretions and covered with clean glass cover slip and observed under low power and high power for budding yeasts with and without pseudohyphae.

iii. Gram's staining:

Smears were prepared on clean glass slides with 2nd vaginal swab for Gram staiing and were observed under oil immersion objective for the presence of clue cells. (Bailey & Scott's Diagnostic Microbiology 1998).[6]

Isolation by Culture Methods :

Third vaginal swab was inoculated on 5% sheep blood agar, human blood agar, chocolate blood agar, MacConkey's agar and Sabourauds dextrose agar and nutrient agar.

Identification of Bacterial Isolates :

Colony Morphology observed on culture plates. Hanging drop preparation for motility, routine biochemical tests for identification of comon isolates and special tests for specific pathogens were conducted as standard laboratory procedures.

Microscopic Examination :

Gram's staining: Grams staining was performed from the colonies on blood agar, chocolate agar, nutrient agar andMacConkey agarplates and observed the gram positive and gram negative organisms under oil immersion objective.

Biochemical Tests: (Ref. Mackie & McCartney.)

I.Oxidase Test:

To determine the presence of bacterial cytochrome oxidase is done by oxidation of the substrate,that is tetramethyl P-Phenylene diamine di hydrochloride to indophenol,which gives a dark purple coloured product. The dye is reduced to a deep purple colour.

2. Catalase Test :

This test demonstrate the presence of the catalse an enzyme that catalyses and release of oxygen from hydrogen peroxide.

3. Indole Test:

This test demonstrates the ability of certain bacteria to decompose the aminoacid tryptophane to indole, which accumulate in the medium containing sufficient tryptophane. Indole production is detected by Kovac's reagent.

4.Methyl Red Test:

The methyl red test is employed to detect the production of sufficient acid during the fermentation of glucose and maintenance of condition at the pH 4.5. In the presence of the acid the test is positive, development of pink colour is noted. If the test is negative it will be yellow in colour.

Medium (Glucose Phosphate Peptone water broth):

Peptone - 5 gms
Di Potassium Hydrogen Phosphate (K_2HPO_4) - 5 gms.
Water - 1 Lt.
Glucose 10% solution - 50 ml

Methyl Red indicator contains - Methyl Red 0.1 gm. Ethanol 300ml, Distilled Water 200 ml.

5.Voges-proskauer (Acetoin production) Test:

Many bacterial ferment carbohydrates with the production of acetyl methyl carbinol (CH_3 CO CHOH CH_3) or its reduction product 2, 3 butylene glycol (CH_3 CHOH CHOH CH_3) The substances can be tested by for a colorimetric reaction between diacetyl (CH_3 CO CO CH_3) formed during the test by oxidation of acetyl methyl carbinol or 2, 3 butylene glycol) and a guanidino group under alkaline conditions.

Result :A positive reaction was indicated by the development of purple colour in 2 to 5 min., becoming Crimson within 30 min.

6. Citrate utilization Test

This is a test for ability of an organism to utilize citrate is the sole carbon and· energy source for growth and ammonium salt as the sole source of nitrogen.

1. Urease test :

Urease enzyme hydrolyses the urea into ammonia and carbon dioxide.

NH_2 CO NH_2 + H_20 – 2 NH_3 + CO_2**.** The medium used is Christensen's urea agar. The presence of enzyme is determined by inoculating an organism on Christensen's urea agar heavily and incubated at 37°c, the test was examined after 24 hrs.

The detection of ammonia by changing the colour of the indicator in the presence of alkaline PH (NH3). Produce purple pink color.

2. Coagulase Test: Coagulase test both slide and tube tests were done for identification of pathogenic Staphylococci. Fresh sterile human plasma was used.

A. Slide Coagulase Test: for Bound Coagulase: A grease free clean glass slide was divided into two portions with glass marking pencil. A drop of normal saline was place on each section and one loopful of Staphylococcus growth was taken from the nutrient agar plate and was emulsified in each of the two drops to make smooth suspension. A drop of undiluted plasma was added to only one part of the Staphylococcal emulsion and stirred gently with a sterile wire. Clumping of the organism resulted if the strain was coagulase positive. The control side, which no plasma was added, did not show any clumping as it was done to exclude spontaneous autoagglutination.

B. Tube coagulase Test: For free coagulase: The tube coagulase test was done to detect free coagulase. Fresh human plasma was diluted one in six (1 :6) and 0.5 ml of it was taken in three narrow test tubes. To one tube approximately 0.1 ml of overnight broth culture suspension of test organism was added. To the second tube 0.1 ml of over night broth culture suspension of known

Coagulase positive staphylococci was added, which acts as positive control. Diluted plasma alone in the third tube servers as negative control. The tubes were incubated at 37°c in the water bath and examined 1,2, and 4 hours for clot formation by tilting a tube through 90°. If positive the plasma that clotted did not flow when the tube was inverted. If negative the tubes were left at room temperature overnight and re examined.

Gardnerella vaginalis Identification: Culture plates were examined for the presence of greyish white colonies 0.5 to 1.0 mm size with diffuse Beta hemolysis on blood agar plate. Chocolate agar plate showed transparent tiny colonies without hemolysis. There was no growth on MacConkey agar. Staphylococci isolated on blood agar and MacConkey agar plates were identified as coagulase positive staphylococcus or coagulase negative staphylococcus on the basis of positive or negative coagulase test accordingly and also differentiated by mannitol fermentation on mannitol salt agar for staphylococcus aureus. Mannitol salt agar was turned into yellow colour due to fermentation of mannitol sugar by the growth of staphylococcus aureus on mannitol salt agar plate.Strepto cocci beta hemolytic group B were isolated on sheep blood agar and identified by positive CAMP reaction.

CAMP TEST (Christie, Atkins and Munch Peterson)

CAMP factor produced by beta hemolytic streptococci which enhances the action of staphylococcal beta-lysin. Staphylococcus aureus was inoculated as a streak across a blood agar plate containing 5% sheep blood and a colony of Beta hemolytic streptococci was streaked perpendicularly to that of the staph aureus, leaving 1 cm space between two streaks and incubated at 37°c for 24 hrs in 10% CO2 and observe an area of increased lysis appeared at the junction of the two streaks. Other bacterial isolates were identified based on colony characterstic and biochemical reactions according to Mackie & McCartney (1996).

Antibiotic Susceptibility Tests:

Antibiotic sensitivity for Gardnerella vaginalis was kept on 5% blood agar plate with lattice streaking by using Kirby Bauer disc diffusion method (Bauer, and A. W. Kirby et.al 1966).[9]

After overnight incubation, the degree of sensitivity was detected by measuring the zone of inhibition of growth around the discs, and the result were compared with standard interpretative chart (HI media)

Antibiotic discs used:	units µ m	Sensitivity (mm)	Resistance (mm)
Ampicillin	10	22mm	18mm
Gentamycin	10	15mm	12mm
Tetracycline	30	19mm	14mm
Ceftriaxone			
Co-trimoxazole	25	16mm	10mm
Ciprofloxacin	1	21mm	15mm
Metronidazole	25		
Metronidazole	50		

Identification of Candida spp:

Candida species isolated from sabourauds dextrose agar were identified after 48 hrs incubation at room temperature by colony morphology, Grams staining and Germ tube production.

Gram's Staining: A loop full of distilled water was kept on clean microscope glass slide and a small part of fungal colony was picked up with sterile loop and mixed in distilled water and smeared on the slide and heat fixed and stained with Gram's staining. Candida budding cells were identified under oil immersion objective as gram positive oval or round or elongated budding cells.

Germ tube Test: (Odds.F;C. 1979) The first step in the identification of an unknown yeast isolate is to perform a germ tube test (Color Atlas Koneman).

RESULTS

The present study on leucorrhoea was aimed at isolation, identification and to assess the frequency of occurrence of various microbial agents in reproductive age group. The study group included 125 women who attended to Gynaecology and Obstetics and Veneriology outpatient departments, Owaisi Hospital, Hyderabad Out of them 80 from Gynaecology, 30 from Veneriology, 15 antenatal women with BOH from obstetrics.(TABLE no: I). Majority of the women in the study group belongs to urban- area 64% TABLE no: II, low socio economic 60% TABLE no:III, illeterates 59.2%. (TABLE no:IV). Among the study group majority of them were in the age group 21-30 years with complaints of leucorrhoea. Women in the age group 21-25 years were 24% 26-30 years 20.8% and followed by women in the age group 31-35 years 15.2% and 36-40 years 12%, 16-20 years 16%. The number of women in the age group 41-45 years was 12%. (TABLE no :V).Majority of women in the study group 85 were having profuse vaginal discharge (68%) and women with minimal discharge with foul smelling were

40 (32%), (TABLE no. VI). Among the leucorrhoea cases in the present study bacterial isolates were more in number than candida species and Trichomonas vaginalis observed in wet films. Among the study group bacterial vaginosis, with positive amine test, clue cells and pH >5 with greyish white discharge formed major group with 30(24%) candida species-30(24%) (candidaalbicans 22, Candida nonalbicans-8). Trichomonas vaginalis --15(12%). (TABLE no:VII). The other non pathogenic bacteria like staphylococci(22%), Escherichia coli 4%, Other strepto.cocci-3.2%, were isolated. All these are commensal bacteria in vagina (TABLE no:VIII). The nature of discharge in TABLE number IX showing profuse greyish watery discharge was present in 35 cases (28%). Followed by curdy white discharge 28%, purulent 24%, mucoid 20%. According to Nugent's scoring system by Gram's staining smears (TABLE no X), maximum number of cases were 55(44%) belongs to category II with a score of 4-6 followed by category III with a score of >7- (36%) followed by 25 cases of category I (20%). Among the study group in correlation with vaginal pH, Amine test, clue cells in Gram staining , TABLE number XI showed as pH >5 in 80 (64%) positive amine test in 35 cases (28%).Presence of Clue cells in 35 cases (28A%). Gardenella vaginalis was culture positive in 16 cases. All the isolates showed oxidase and catalase negative and fermented sugars with production of acid only and were susceptible to Metronidazole, Ciprofloxacin, Ampicillin, tetracycline. (TABLE no: XIV.) Among 10 antenatal women with bad obstetric history 1 case was positive for Amine test, clue cell with pH >5. Candida species isolated in 4 cases, coagulase negative staphylococcus in 3, beta haemolytic streptococci in 1. (TABLE no.- XIII). Among the study group Candida species observed in wetmount in 20 cases and isolated in 225 (22.4%)cases. (TABLE no:XII). Among the study group Trichomonas vaginalis was positive in wet mount examination were 15(12%). (TABLE no:VI),.

Table.I. Total number of cases in the Study

S.NO.	OUT PATIENT DEPARTMENT	NO.OF CASES
01.	Gynaecology	80
02	Obstetrics	15
03	Veneriology	30
	Total	**125**

Table.II. Urban – Rural distribution

Location	Study group	
	Number	%
Urban	80	64
Rural	45	36
Total	**125**	**100**

Table. III. Categorization of Cases by Socio-Economic Status

Categorization	Study group	
	Number	%
Low	75	60
Middle	50	40
Total	**125**	**100**

Table.IV. Leucorrhoea cases based on literacy

Literacy	Study group	
	Number	%
Literate	51	40.8
Illiterate	74	59.2
Total	**125**	**100**

Table.V. Age – Wise distribution of Leucorrhoea cases

Age in group	Study group	
	Number	%
16 – 20	20	16
21 – 25	30	24
26 – 30	26	20.8
31 – 35	19	15.2
36 – 40	15	12
41 – 45	15	12
Total	**125**	**100**

Table.VI. Amount of discharge in Cases

Discharge	Study group	
	Number	%
Profuse	85	68
Minimal with foul smell	40	32
Total	**125**	**100**

Table.VII. Analysis of Specific Pathogenic Organisms in Wet Film,Gram's stain and Culture

Organism		Study group	
		Number	%
Bacterial	Bacterial vaginosis (clue cell positive in Gram stain)	30	24
	Gardenerella vaginalis culture positive	16	---
Fungal	Candida albicans	22	24
	Candida Non albicans	8	
Protozoal	Trichomonas vaginalis (in wet film)	15	12
	Total	**91**	

Table.VIII. Other Bacterial Isolates in Leucorrhoea Cases

Organism isolated	Study group	
	Number	%
Staphylococci	28	22
Diphtheriods	20	16
Micrococci	20	16
Other Streptococci	4	3.2

Table.IX. Nature of Vaginal Discharge in Women

Nature of Discharge	Study group	
	Number	%
Profuse Greyish white	35	28
Frothy Purulent	30	24
Curdy white	35	28
Mucoid	25	20
Total No. of Cases	**125**	**100**

Table.X .Grading of vaginitis cases - Nugent's scoring system by Gram stain

Category (Grade)	Score	No. of Cases	%
I	0 – 3	25	20
II	4 – 6	55	44
III	7 – 10	45	36
Total		**125**	**100**

Table.XI. Correlation of Vaginal PH, Amine Test, discharge, Clue cells

Nature of Discharge	Study group	
	Number	%
PH > 5	80	64
Amine Test Positive	35	28
Greyish White discharge	35	28
Clue Cell Positive	35	28

Table.XII. Candida Spp. In wet mount Versus Culture Findings

Total no. of Candida spp.	Wet mount	Culture Positive
28	20	25

Table.XIII. Analytical data of Antenatal Cases

S.No.	Present Obstetric History	PH	Amine Test	Nugent Score	Culture
1	$G_3P_0A_2$ with- 12 weeks gestation	5.5	Negative	4	CNS
2	$G_4P_2L1D_1A_1$ with – 20 weeks gestation	6.5	Positive	8	Gardnerella vaginalis
3	$G_5P_1LoA_3$with - 12 weeks gestation	5	Negative	4	Candida albicans
4	$G_4P_2L1D_1$ A1with – 28 weeks gestation	6	Negative	6	CNS
5	$G_4P_1L_1D_1$ A_1 with- 20 weeks gestation	6	Negative	4	B- Hemolytic Streptococci
6	$G_3P_0L_0A_2$ with - 24 weeks gestation	5.5	Negative	4	Candida Non albicans
7	$G_3P_1L_1A_1$ with – 26 weeks gestation	6.5	Negative	4	CNS
8	$G_5P_1L_1A3$ with – 20 weeks gestation	< 5	Negative	5	Candida Non albicans
9	$G_4P_1L_1A1$ with– 20 weeks gestation	< 5	Negative	4	Candida Non albicans
10	$G_4P_1L_1A2$with - 28 weeks gestation	< 5	Negative	4	Candida albicans

Table.XIV. Sensitogram of Gardnerella vaginalis

S.No.	Name of the Drug	G.Vaginalis-16	
		No	%
1	Ampicillin	5	31.25
2	Tetracycline	4	25
3	Gentamycin	4	25
4	Ciprofloxacin	6	37.5
5	Co-trimoxizole	0	0
6	Ceftriaxone	2	12.5
7	Metronidazole 25 mg	2	12.5
8	Metronidazole 50 mg	8	50

DISCUSSION

A total number of 125 cases were taken for the present study. Out of them 80 were from Gynaecology, 15 from antenatal and 30 from Veneriology outpatient departments, Owaisi Hospital, Hyderabad.(TABLE-I). National and international comparisons are hampered because of the different methodology of the studies. The majority of the studies investigated the prevalence of each organism separately[4].Among the study group majority of the women belonged to urban population (64%) (TABLE-II). The incidence was more in low socioeconomic group (60%)(TABLE-III), due to poor hygienic conditions . Majority of the women in the present study were illiterates (59.2%)(TABLE-IV). and leucorrhoea was more common in age group of 21- 30 years(TABLE-V).This correlates with the study of Bansal KM (2001) who reported the highest number of Leucorrhoea cases in the age group of 21 – 30, showing a relation with period of high fertility, illiteracy, poor hygienic conditions. The amount of discharge was profuse in 85 cases (68%)(TABLE-VI).The study was closer to the study of Srivastava-2004.(78.26). Among the study group the prevalence of Bacterial vaginosis was the predominant (24%) followed by Vulvovaginal candidiasis (24%) and Trichomoniasis.(12%)(TABLE-VII). The order is correlated with the following various studies. JackD Sobel-1997 – Bacterial vaginosis (50%) followed by Vulvovaginal candidiasis (25%) & Trichomoniasis (20%). Prevalence of Bacterial vaginosis according to various authors, JW Mahadani, 1998 (32.90%), My study (30.4%) was correlated with the above studies.(TABLE no. XVl). According to Nugent scoring system for vaginal smears has revealed that maximum number of cases in my study belongs to category II and III. (TABLE – X). Bacterial vaginosis was diagnosed based on Amesl criteria which is a “gold standard” for the diagnosis of bacterial vaginosis. Among the study group nature of vaginal discharge was greyish white, pH > 5, Amine test and presence of clue cells in gram staining were positive in 38 cases.(TABLE – XI). Among the study group prevalence of bacterial vaginosis by smear positive in 38 (30.4%) cases. Out of 38 culture positive for Gardnerella vaginalis in 16 (12.8%) cases in reproductive age group. P.S. Rao et al 2004 reported by smear positive in 104 (20.5%)cases and culture positive in 88 (17.42) cases out of 505 women in reproductive age group. Evaluation of tests for bacterial vaginosis shown that the Gram stain scoring is better than Gardnerella vaginalis culture. Among the study group 10 asymptomatic antenatal women with bad obstetric history were taken to know the incidence of various microorganisms

which play a role in unsuccessful pregnancies. Among 10 one case met with Amsel criteria diagnosed as bacterial vaginosis. (TABLE – XIII.) Various studies establish the association of genital tract infections with preterm labor in antenatal women. Among the study group antibiotic susceptibility revealed Gardnerella vaginalis was more sensitive to metronidazole (62.5%) followed by ciprofloxacin (32.5%) , Ampicilin (31.25%), and Gentamycin (25%).(TABLE – XIV). Among the study group, candida species28 (22.4%) were isolated. Incidence was maximum in the age group 21-35 years. Out of them, 20(16%) cases were candida albicans, 8 (6.6%)were candida non albicans. The prevalence of Candida species in various studies were Mendiratta DK 1992 reported 24.33%. My study was correlated with above studies. (TABLE – XVIII). It was observed that culture of vaginal swabs for isolation of Candida proved to be the superior method in detecting vaginal candidiasis when compared with Gram staining and wet mount examination. (TABLE – XII). My study was correlated with Mendiratta DK 1992. Among the 10 antenatal women 5 (50%) Candida species were isolated. Puri KJ Madan et al., 2003 reported 61.61% pregnant women had vulvovaginal candidacies, which correlated with my present study. Because during pregnancy, the vagina shows an increased susceptibility to infection by candida species. It is generally thought that high levels of hormones by providing a higher glycogen content in the vaginal tissue, provide an excellent carbon source for Candida organisms, and estrogen enhances adherence of Candida cells to the vaginal mucosa. Among the study group Trichomonas vaginalis was observed in 15(12%) cases. Culture for isolation was not done. The prevalence of Trichomonas vaginalis in different studies were T.N.Misra 1997 (10.75), snehalatha et al 2000 (10%), the present study correlated with the above studies. (TABLE No. XIX). Overall prevalence of Trichomonas vaginalis varies from place to place and from study to study and is ranging from 6-14.9%. The rate depends upon many factors including age, sexual activity, number of sexual partners other STD, sexual customs, phase of menstrual cycle, technique of examination specimen collection, and laboratory technique. From these clinical findings,diagnosis based on clinical presentation is not reliable. Therefore laboratory diagnosis is necessary for the confirmation of clinical diagnosis for better treatment of these bacterial infections.

CONCLUSION

Microbial infections of lower genital tract are very common especially in sexually active women in the reproductive age group. Most of the lower genital tract infections in female are polymicrobial in

nature. Non specific vaginitis or bacterial vaginosis is mostly associated with Gardnerella vaginalis. Specific vaginitis with Trichomonas vaginitis and vaginal Candiasis are very frequent in the reproductive age group. Lower genital infections in pregnancy are likely to be associated with preterm deliveries due to chorioamnionitis leading to premature rupture of membranes which may lead to increased perinatal mortality. Finally we concluded that early and proper diagnosis and timely treatment of infected women including the sexual partners is essential in cases of vaginal infections which requires laboratory assistance.

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