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ISOLATION AND CHARACTERISATION OF BACTERIAL VAGINITIS IN HIGH VAGINAL SWAB CULTURE

Mrs. Vanithadevi Elangovan[1], Dr.G.Amarkumar[2], Dr.Padmaja[3]
[1]Assistant Professor, Department of Microbiology, Konaseema Institute of Medical Science & research Foundation, Amalapuram Andhra Pradesh-533201
[2]Associate Professor, Department of Microbiology, Arunai Medical college and Hospital, Thiruvannamalai ,Tamilnadu
[3]Professor and HOD, Department of Microbiology, Konaseema Institute of Medical Science & research Foundation, Amalapuram Andhra Pradesh-533201

Corresponding Author

Dr. Padmaja
Professor and HOD, Department of Microbiology, Konaseema Institute of Medical Science & research Foundation, Amalapuram Andhra Pradesh-533201

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ABSTRACT

Background: Bacterial vaginosis (BV) is a common vaginal infection caused by an in balance in the vaginal microbiota, often leading to discomfort and abnormal discharge, BV occurs due to a shift from lactobacillus dominance to an overgrowth of anaerobic bacteria. This study crime to identify bacterial profiles and analyze antibiotic susceptibility patterns from high vaginal swabs collected from women of reproductive age.

Materials and methods: A prospective study was conducted at the Konaseema Institute of Medical Sciences and Research Foundation, Amalapuram, Andhra Pradesh, India. In this duration period is 18 months (2024 January to June 2025), 475 high vaginal swabs were collected from gynecological clinic

Collected samples are sent to the microbiology department for direct microscopy, culture and antibiotic susceptibility testing by using Kirby – bauer disc diffusion method per CLSI guidelines, and biochemical test.

Result: Among the 475 samples, 242.25 (51%) tested positive for bacterial pathogens the most common isolates were Escherichia coli (26.8%), Staphylococcus aureus (25.5), group B Streptococci (11%), Enterococcus Species(10.1%), coagulase-negative staphylococcus (2.9%), klebsiella pneumonia (4.5%), pseudomonas aeruginosa(5.3%), antibiotic susceptibility testing showed higher effectiveness against gram-negative bacteria particularly for meropenem (9.09%), piperacillin Tazobactum (9.09%), cefotaxime (18.18%) ,in gram positive bacteria vancomycin(16.12%) , clindamycin (17.24%) , the study emphasizes the need for complete investigation of aerobic vaginal pathogens in patient with clinical symptoms of vaginitis.

Conclusion: In this study Escherichia coli (26.8%) identified as the most prevalent cause of abnormal vaginal discharge in reproductive age women .this study highlights the importance of regular screening and antibiotic resistance monitoring to ensure effective treatment strategies.

Keywords: BV - bacterial vaginosis, GBS - group B Streptococci.

INTRODUCTION

sexually transmitted infections (STIs) are serious global problem, causing disease suffering and death .although bacterial vaginosis is not considered to be an STIs it may be associated with an increased rise of contracting a wide range of STI, increased incidence of sexually transmitted infection by more than one million new cases every day ,has led to an alarming major health crisis. This increase in sexually transmitted infections is a case for concern, as sexual contact can spread more than 30 different bacteria , virues, and parasites. there is and direct impact on sexual and reproductive health caused by sexually transmitted infection in women upper and lower reproductive tracts, asymptomatic sexually transmitted infections are a cause for concen,as they difficult to identify,

sexually transmitted disease (STDs) are prevalent it is estimated that 340 million new cases occur among adult worldwide, this condition are also regarded as important health problem for its medical, social, and economic implication bacterial vaginosis is a dysbiosis ,in which decrease in resident vaginal lactobacilli is associated with a growth of anaerobic polymicrobial flora, bacterial vaginosis is not consider as a sexually enhanced disease ,in which the frequency of intercourse play a critical role,, further, more, bacterial vaginosis has been associated with increased

susceptibility to HIV-AIDS and other STD. the specific and risk factor associated with bacterial vaginitis are not understand properly, however associated with sexual activity ,uses of hygiene product that after the vaginal ecosystem and genetic predisposition have been described, undiagnosed or untreated there infections might interfere with women reproductive health, being commonly associated with many obstetric conditions such as pelvic inflammatory disease(PID),premature rupture membrane(PROM) prematurity, and infertility and also increasing risk of HIV-1transmission.in genital infection is the leading cause of fungal vulvovaginitis. Pregnancy, broad spectrum antibiotics use, diabetes mellitus, and immunodeficiency have been described as important risk factor for candida genital infection however, asymptomatic microorganism colonization can occurs in 25-50% of the cases. In this Trichomonase vaginitis is often transmitted by sexual intercourse it is a most common sexually transmitted pathogen accounting for 180 million infection annually ,it is asscosited with the T. vaginalis a yellowish green frothy discharge , pyuritis dysuria, and the ‘’strawberry” cervix which is characterized by punctuate hemorrhagic lesions. During the period of life, reproductive hormones cause considerable physiological and tissue changes, which may increase susceptibility io infection.at this stage,the cylindrical epithelium of the endocervical channel is more ectopic and exposed to various agent that commonly infect these tissues. the kind of epithelium present and other aspect of the micro environment determine which infection can affect the vagina ,ectocervix, and endocervix, candida species, Trichomonase vaginalis, and gardnerella vaginalis can infect the squamous epithelium of the vagina and endocervix.the numerous organism carried by women of reproductive age are Escherichia coli,candida,listeria, and group B streptococci(GBS) Life treatening new born illnesses including sepsis, meningitis and necrotizing entero colitis can result from preterm delivery and extremely low birth weight babies which are closely linked to E. coli problem may arise if E. coli infiltrate amniotic fluid when it passes through the birth canal or prior to delivery. GBS colonization is a significant risk factor for choriamnionitis, preterm labor, and low birth weight. Aerobic vaginitis characterized by disturbed microflora and increase pH causes symptoms like yellowish discharge and dyspareunia, bacterial vaginosis can be diagnosed using clinical or laboratory scoring system. gardnerella vaginalis ,mobiluncus ,and lactobacillus proposition are graded by standard table called nugents grading method .high nugent scores are linked to a high risk of STDs. Preterm delivery and negative perinatal outcome include pelvic inflammatory disease ,chrioamnionitis postpartum endometritis ,repeat abortion ,and post abortal sepsis,the chance of early birth is doubled in pregnant women with bacterial vaginosis. Neisseria gonorrhea ,chlamydia trachomatis, T. vaginalis and GBS(Streptococcus agalactiae) are common cause of vaginal discharge, while gram negative rod including E.coli, kilebsiella, proteus, Acinetobacter and pseudomonas spp and other source of transmission ,although it’s a common issue ,vaginal discharge is frequently ignored. Simple test including wet mount, gram stain are in expensive and widely regulated as the gold standard for diagnosis, and they may readily identify these infections.

MATERIAL AND METHODS

Patient preparation

The patient is advised to avoid using vaginal product (such as douches or cream) for 24-48 hours before test to ensure accurate results sample should be collected before taking antibiotics.

Sample collection

A health care professional inserts a sterile swab in to the upper vaginal wall near the cervix, and gentle rotate the swab 10-30 sec. a double swab is rotated cells and microorganism were collected.

Inclusion criteria

Such as abnormal discharge, odor, itching and patient with recurrent or persistent vaginal symptoms requiring further investigation.

Exclusion criteria

During active menstruation may leads to contamination and unreliable result. Recent uses of vaginal medication: it can alter the test accuracy Post procedure vaginal trauma: if the patient has under gone recent vaginal surgery or procedure swabbing may not be advisable. Inability to tolerate the procedure It is prospective study institute of medical science and research foundation in amalapuram department of microbiology, Andhra Pradesh, India. 475 samples were collected in this study.

DATA COLLECTION

data collection involved detailed questionnaire ,with written consent from patient at the gynecological OPD and IPD of at konaseema institute of medical science and research foundation in amalapuram, information recorded include patient demographics(name, age ,sex, marital status, pregnancy status) associated symptoms like itching vaginal discomfort , and pelvic pain were also noted.

METODOLOGY

After collection of sample, all the swabs were inoculated on blood, chocolate, and macconkey agar plates. Plates were incubated aerobically for 18-24 hours. Preliminary identification was done based on colonial characteristics (shape , translucency, color, margins, and surface elevation) gram stain and biochemical reactions,(catalase test, cytochrome oxidase test, coagulase test, bile Esculin test,phenyl pyruvic acid test, indole production test, citrate utilization test, urease production test , triple sugar iron test) mucoid , lactose fermenting colonies of gram rod and hemolytic , non hemolytic ,pin point and , pin head , gram positive cocci identified. Antibiotic sensitivity testing was using (modified Kirby –Baue's) disc diffusion method. Antimicrobials tested for sensitivity were done in gram-positive bacteria penicillin, erythromycin, ciprofloxacin, clindamycin, vancomycin daptomycin linezolid ,gentamycin levofloxacin, tigecycline . in gram negative bcilli pipracillin tazobactum , imipenem meropenum gentamycin amikacin cefotaxime ceftazidime ciprofloxacin cotrimoxazole tobramycin tested incubation plates were examined to read the susceptibility zone data obtained were presented as distribution of microorganism were isolated.

DISCUSSION

Vaginitis is a more notable clinical condition which may leads to significant discomfort, morbidity and even frequent hospital visit. If left untreated may lead to complications, especially in pregnant women and women of child bearing age group,

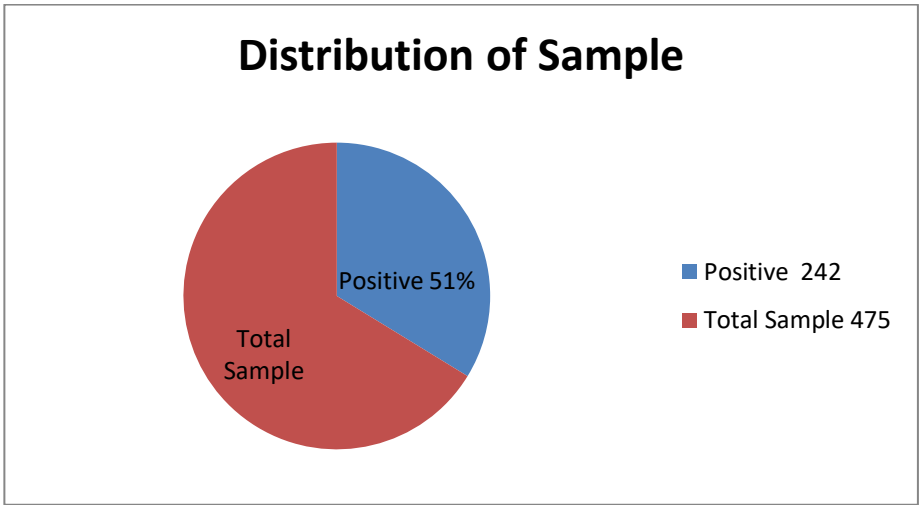

Table: 1 Pie chart show positive distribution of sample

It is very difficult to determine its exact prevalence because the figures very greatly depending on geographic location, patient age, socioeconomic background types of consultation in pregnant status. In our study gram gram-negative bacteria expressed a higher percentage,in Escherichia coli (26. 8%) and Staphylococcus aureus (25.5%),and other organism isolated group B streptococci(11%),Enterococci (10.1%) ,coagulase negative staphylococcus (2.9%) Klebsiella pneumoniae (4.5%), psedomonas aeruginosa (5.3%).in this study antibiotics are sensitive for

Age Group Years	No of Patients n=475	Percentage
19-23	198	42%
24-28	120	25%
29-33	95	20%
34-38	10	2%
39-43	7	1%
44-48	8	2%
49-54	12	3%
55-60	21	4%
61-66	4	1%

Table: 2 Age wise distribution of patient's

Gram positive bacteria erythromycin, ciprofloxacin, clindamycin , levofloxacin, while gram negative bacteria sensitive to pipracillin tazobactum (9.09%) meropenum(9.09%) cefotaxime (18.18%) Tobramycin (38.46) clindamycin were sensitive to all gram positive bacteria , medicans

Microorganisam	**Bacteria Isolated**	**No. of Isolates**	**Percentage**
Gram Positive Bacteria	Staphylococcus Aureus	62	25.60%
	Coagulase Nagative Staph. Aureus	14	5.79%
	Erotew bacter spp	48	19.38%
	Geoup B Stepto	29	20.24%
Gram Nagative Bacteria	Escherichia Coli	65	26.88%
	Kletsiella Pneumonial	11	4.54%
	Psedomonase	13	5.37%

Table: 3 Identified Microorganism in high viginal swab

Antibiotics	**Staphylococcus n=62**		**Grap B Streptococcus n=29**		**Enterococcus n=48**		**Coagulase Negative Staphylococcus Aureus n=14**	
penicillin	8	12.90%	9	31.03%	2	4.10%	1	7.14%
Erythromycuin	5	8.06%	10	34.40%	1	2.08%	1	7.14%
Ciprofloxain	5	8.06%	1	3.44%	2	4.10%	1	7.14%
Clindamycuin	8	12.90%	5	17.24%	1	2.08%	2	14.28%
Vancomycin	10	16.12%	1	3.44%	5	10.41%	5	35.71%
Daptomycuin	11	17.74%	1	3.44%	10	20.83%	2	14.28%
Linezolid	6	9.67%	1	3.44%	8	16.66%	1	7.14%
Gentamycuin	2	3.22%	1	3.44%	1	2.08%	1	7.14%
Levafloxacin	7	11.27%	NT	NT	3	6.25%	NT	NT
Tigeycline	NT	NT	NT	NT	12	25%	NT	NT

Table: 4 Percentage of Sensitivity of dram positive bacteria to various antibiotics(NT-Not detected)

Are effective if taken oral or vaginally,it is safe to use pregnant women and who are symptomatic from bacterial vaginosis should be treated before 22 weeks of gestation to readuce the rise of preterm labor.

Antibiotics	Klrbsiell Pnumonine n=11		Escherichici Coli n=65		Psedomonas Spp n=13	
Pipeacillin Tazobactrerium	1	9.09%	30	46.15%	2	15.38%
Imipenem	1	9.09%	3	4.60%	1	7.69%
Meropnem	1	9.09%	15	23.07%	1	7.69%
Gentamycin	NT	NT	1	1.53%	NT	NT
Amikacin	1	9.09%	5	7.63%	1	7.69%
Cefotasime	2	18.89%	5	7.63%	1	7.69%
Ceftozidime	3	27.27%	2	3.06%	1	7.69%
Ciprofloxacin	1	9.09%	2	3.06%	1	7.69%
Cotrimoxazole	1	9.09%	2	3.06%	NT	NT
Tobramycin	NT	NT	NT	NT	5	38.46%

Table 5: Percentage of Sensitivity of Gram Negative Isolative to various Antibiotics

CONCLUSION

Bacterial vaginosis is a common genital tract over growth often encounted by emergency department physicians family medicine clinicians internists ,and gynecologist. Bacterial vaginosis significantly diminishes the quality of life for affected women. Bacterial vaginosis occurs as aresult of a vginal imbalance in the patient,or exogenous linked to environment must lead to a personalized treatment . vaginitis is due to either to bacteria or parasites, and fungus. Yellowish , foul smelling ,little itching discharge is more likely to be a sign of bacterial vaginitis. The mucous membrane of of the vagina are normally protected in an acidic environment ,an environment generated by Lactobacillus acidophiles which acidifies the environment .a poor diet and an unbalanced intestinal flora ,a week immune system in sufficient local hygiene will provide the bed for vaginitis. our study has highlighted the great etiological diversity of female genital infection with a predominance of bacterial vaginosis due mainly to gardenella vaginalis but also an important frequency of bacterial vaginitis represented essentially by Escherichia coli ,Staphylococcus aureus , group B streptococci , Klebsiella pneumonia, not only treatment will control the vaginitis all factor must be taken in to account to resolve the imbalance of the flora responsible for recurrent infections.it is sometimes necessary to wait several weeks before obtaining a good result and insist on controlled by hygiene, limited uses of antibiotics , considering alternative birth control the efficient management of vaginitis causes depends on the appropriate diagnosis of causative agent to intiate the correct therapy and prevent the consequence of vaginitis,further this may help in judicial usage or the antimicrobial drug preventing the emergency of resistant bugs. appropriate diagnosis of the vaginitis cause using standard microbiological methods with complete antimicrobial susceptibility testing is highly recommented.

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