

Aerobic Microbiological Profile in Vaginal Discharge Syndrome

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ABSTRACT

Introduction : Vaginal discharge syndrome consists of abnormal vaginal discharge, vaginal itching, painful urination and painful sexual intercourse, among them abnormal vaginal discharge is one of the most common clinical symptoms for which most of the female seek care for management in gynaecology and obstetrics outpatient department. Abnormal vaginal discharge in the women of reproductive age can lead to subfertility, ectopic pregnancy, early rupture of membrane, chronic pelvic pain and increases susceptibility for HIV virus and oncogenic virus.

Objective : To identify aerobic microflora associated with vaginal discharge and find out most useful drugs for it.

Material and Methods : A Hospital based cross sectional study was carried out at Nepalgunj Medical College Teaching Hospital, Kohalpur in November 2016 to November 2017. Ninety- five women who were at reproductive age group with vaginal discharge and met inclusion criteria participated in the study. Samples were taken from posterior fornix of vagina with the help of cotton swab following the confirmation of vaginal discharge by per speculum examination, culture and sensitivity was done.

Result : The mean age of participants was 32.7±8.1. Out of 95 participant's samples, aerobic vaginal microfloras were grown in 18 (18.94%) participants and 77 (74.73%) samples was found to be sterile. E.coli and staphylococcus aureus (predominant aerobic vaginal flora) was grown in 7(38.88%). E.coli was sensitive with all available antibiotics in majority of samples showed sensitive to ciprofloxacin, ceftriaxone, tobramycin and meropenam i.e 6 (85.71%) each followed by cefixime and cefpodoxime 5(71.42%), least sensitive with doxycycline 4(57.14%).

Similarly, in majority of the samples Staphylococcus aureus was also found to be sensitive with doxycycline, ceftriaxone and meropenam 7(100%) each followed by tobramycin in 6(85.71%), ciprofloxacin and cefixime 2 (28.58%), least sensitive with cefpodoxime 1(14.29%). Meanwhile Ciprofloxacin and tobramycin 2(100%) found to be more effective for klebsiella pneumoniae and doxycycline, meropenam, cefixime and cefpodoxime was found to least effective 1(50%). Chloramphenicol was the only drug sensitive to streptococcus in total collected samples. However Acinetobacter was sensitive with ceftriaxone, ciprofloxacin and doxycycline 1(100%) each but resistant with rest of the antibiotics like meropenam, tobramycin, cefixime and cefpodoxime 1(100%). Most microorganisms were found to be sensitive with ceftriaxone, tobramycin and meropenam 14 (77.77%) and was followed by doxycycline 13 (72.22%) and ciprofloxacin in 11 (61.11%). Cefpodoxime 11(61.11%) and cefixime 10 (55.55%), they found poorly in sensitivity test.

Conclusion : Bacterial culture and its sensitivity in vaginal discharge should be done not only because of its troublesome symptoms but for its complications like subfertility, preterm delivery, ectopic pregnancy and it's increased susceptibility for HIV and oncogenic virus. E.coli and staphylococcus were the predominant bacteria found in present study and were followed by klebsiella pneumoniae, streptococcus and acinetobacter. In this study, Ceftriaxone(85.7%) and meropenam (100%) were found to be more effective for E.coli and staphylococcus aureus respectively, ciprofloxacin could be used as a choice of drugs for E.coli (sensitivity 85.7%). However for staphylococcus, doxycycline was a better option with 100 % sensitivity.

Key word: aerobic culture of vaginal flora, vaginal discharge syndrome

INTRODUCTION

Vaginal discharge syndrome (VDS) is the most common cause for which the women seek care in gynaecology outpatient

department. Vaginal discharge culture was performed to find out the common microflora and its sensitivity to different antibiotics. Most of the study report trichomonas vaginalis, bacterial vaginosis, and candidiasis as the leading cause. However gonococcal and chlamydial infection are also found associated with VDS but to a lesser extent¹.

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The vaginal discharge is the result of inflammation of vulva, vagina, cervix mostly due to infection but some time allergy to latex condoms or spermicidal lotions and hidden genital malignancy can cause it. Hence it is very important to exclude other cause and a culture and sensitivity is essential.

METHODOLOGY

This cross sectional study was conducted at Nepalgunj Medical College and Teaching Hospital Kohalpur, in the Department of Obs/gyn. Sample size of 95 patients who came with vaginal discharge during the period from November 2016 to November 2017.

After taking consent with the patients, samples were taken from posterior fornix of vagina with the help of sterile cotton swab. Samples were collected in sterile container. Patients treated with antibiotic within 2 weeks, diagnosed case of immunosuppressive, diabetics, pregnancy and malignant condition were excluded from study. As there was no facility for the anaerobic culture here, only aerobic culture was done.

RESULT

A total no. of 95 patients was included in the study who met inclusion criteria. Mean age of participants was 32.7±8.1.

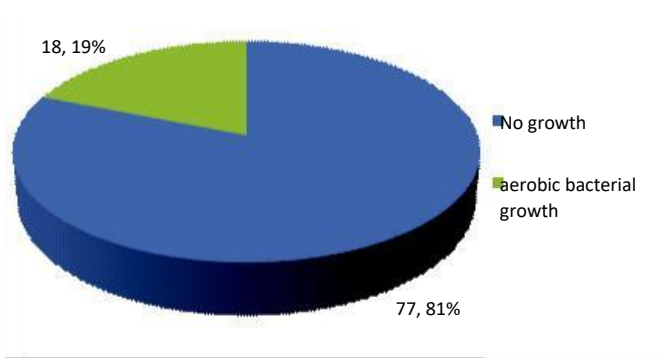


Table 1: Age distribution of study participants (n=95)

Age group (Years)	N	%
< 20	4	4.2
20-30	31	32.6
30-40	36	37.9
40-50	22	23.2
>=50	2	2.1
Total	95	100
Mean age±SD	32.7±8.1	
Age range	16 - 55	

Figure 1 Pie chart showing the percentage of aerobic bacterial growth from the samples that were collected.

Table 2 Bacteria grew in culture media

Aerobic pathogen	Frequency	Percentages
Acinetobacter	1	5.56
E.coli	7	38.88
Klebsiella	2	11.12
Staphylococcus	7	38.88
Streptococcus	1	5.56
Total	18	100

Out of 18 sample that grew bacteria, E.coli and staphylococcus aureus predominated 7(38.88%) each followed by klebsiella 2(11.12%), acinetobacter and streptococcus 1(5.55%)

Table 3: E.coli tested with antibiotics and its sensitivity

Antibiotics	Sensitivity	Resistant	Total
Ceftriaxone	6(85.71%)	1(14.29%)	100%
Ciprofloxacin	6(85.71%)	1(14.29%)	100%
Doxycycline	4(57.14%)	3(42.86%)	100%
Meropenam	6(85.71%)	1(14.29%)	100%
Tobramycin	6(85.71%)	1(14.29%)	100%
Cefixime	5(71.42%)	2(28.58%)	100%
Cefpodoxime	5(71.42%)	2(28.58%)	100%

E.coli isolates were relatively more sensitive with ciprofloxacin, ceftriaxone, tobramycin and meropenam i.e in 6 (85.71%) each, while 5(71.42%) with cefixime and cefpodoxime and least sensitive with doxycycline 4(57.14%).

Table 4: Staphylococcus aureus and its sensitivity with antibiotics

Antibiotics	Sensitivity	Resistant	Total
Ceftriaxone	7(100%)	0(0%)	100%
Ciprofloxacin	2(28.58%)	5(71.42%)	100%
Doxycycline	7(100%)	0(0%)	100%
Meropenam	7(100%)	0(0%)	100%
Tobramycin	6(85.71%)	1(14.29%)	100%
Cefixime	2(28.58%)	5(71.42%)	100%
Cefpodoxime	1(14.29%)	6(85.71%)	100%

In table 4 shows that staphylococcus was also found to be sensitive with all antibiotics but more with doxycycline, ceftriaxone and meropenam 7(100%) followed tobramycin 6(85.71%), ciprofloxacin and cefixime 2 (28.58%) and least sensitive with cefpodoxime 1(14.29%).

Table 5: Antibiotics sensitivity for klebsiella pneumonia

Antibiotics	Sensitivity	Resistant	Total
Ceftriaxone	0(0%)	2(100%)	100%
Ciprofloxacin	2(100%)	0(0%)	100%
Doxycycline	1(50%)	1(50%)	100%
Meropenam	1(50%)	1(50%)	100%
Tobramycin	2(100%)	0(0%)	100%
Cefixime	1(50%)	1(50%)	100%
Cefpodoxime	1(50%)	1(50%)	100%

It shows that most of the antibiotic found to be sensitive to Klebsiella pneumonia except ceftriaxone. Most effective antibiotics for klebsiella pneumonia found to be ciprofloxacin and tobramycin 2(100%).

Table 6: Streptococcus and its sensitivity with antibiotics

Antibiotics	Sensitivity	Resistant	Total
Ceftriaxone	0(0%)	1(100%)	100%
Ciprofloxacin	0(0%)	1(100%)	100%
Doxycycline	0(0%)	1(100%)	100%
Meropenam	0(0%)	1(100%)	100%
Tobramycin	0(0%)	1(100%)	100%
Cefixime	0(0%)	1(100%)	100%
Cefpodoxime	0(0%)	1(100%)	100%
Chloramphenicol*	1(100%)	0(0%)	100%

*Retested for sensitivity due to resistance with all commonly used antibiotics. Above table shows majority of antibiotics were resistant to streptococcus except chloramphenicol.

Table 7: Acinetobacter and its sensitiveness with antibiotics

Antibiotics	Sensitivity	resistant	Total
Ceftriaxone	1(100%)	0(0%)	100%
Ciprofloxacin	1(100%)	0(0%)	100%
Doxycycline	1(100%)	0(0%)	100%
Meropenam	0(0%)	1(100%)	100%
Tobramycin	0(0%)	1(100%)	100%
Cefixime	0(0%)	1(100%)	100%
Cefpodoxime	0(0%)	1(100%)	100%

It shows that acinetobacter was sensitive with ceftriaxone, ciprofloxacin and doxycycline 1(100%) but resistant with other antibiotics like meropenam, tobramycin, cefixime and cefpodoxime 1(100%)

Table 8: Organism sensitivity with antibiotics

Antibiotics	Sensitivity	Resistant
Ceftriaxone	14	4
Ciprofloxacin	11	7
Doxycycline	13	5
Meropenam	14	4
Tobramycin	14	4
Cefixime	8	10
Cefpodoxime	7	11

Among the isolates maximum no. microorganism were sensitive with ceftriaxone, tobramycin and meropenam 14 (77.77%) having doxycycline 13 (72.22%), ciprofloxacin 11 (61.11%), in most, microorganism were resist with cefpodoxime 11(61.11%), followed by cefixime 10(55.5%) and respectively given in table 8.

Repeat cultures done after one week at the treatment, the drug was continued till culture was sterile.

DISCUSSION

Vaginal discharge syndrome has polyetiological factor which makes it difficult to treat. It leads to psychological problem and sequelae like subfertility, prelabour rupture of membrane and vaginal cuff infection in hysterectomized patients. This study aims to find out role of bacteria as a cause of vaginal discharge. The average age of the participants was 33 years \pm 8.

This study showed an Aerobic Bacterial Vaginitis contributes 18.94%, which correlates with the study conducted by Fan and colleagues, who reported prevalence was 23.74%². Study of Sangeetha KT et. al. reported that the overall prevalence of aerobic flora was 20.8%³. Higher prevalence of aerobic vaginitis was observed by Ling C(80%) and by Razzak et. al. (95.45%)^{4,5} but Donders GG et. al, reported prevalence rate of 8.3% among the pregnant women⁶.

In this study, maximum no. of Aerobic Bacterial Vaginitis were due to E.coli and staphylococcus aureus contributing 7(38.88%) cases which was followed by Klebsiella 2(11.11), acinetobacter and streptococcus 1(5.55%). Pal K et. al,⁷ reported that E.coli (24.92%) and Klebsiella pneumoniae (23.50%) were the most common followed by S.aures (16.52%). Mumtaz S et al., found S. aureus in (46.07%) followed by E.coli (13.7%)⁸. Tansarli et al. and Zarbo et al. also reported a high incidence of S.aureus(41.7%) and (27.9%) respectively^{9,10}. Donders GG also reported E.coli, Enterococci, Staphylococcus species as the common cause of bacterial vaginitis⁶.

Sangeetha KT et al^{reported} that enterococcus faecalis (32.26%) was the most prevalent organism isolated which was followed by E. coli (25.8%) and staphylococcus aureus (22.6%)³. Whereas the study conducted by Khan and Khan et al reported, Enterococcus faecalis (31%) as the most frequently isolated vaginal pathogen¹¹.

Zarbo G et. al., recommended amoxicillin with clavulenic acid, neomycin, cefotaxime and ofloxacin for staphylococcus aureus. For E.coli recommended antibiotics were Ciprofloxacin, Ampicillin, Cefalothin and Netilmicin¹⁰. We found doxycycline, ceftriaxone and meropenam (100%) as a choice of antibiotics for S. aureus followed by tobramycin (85.71%). E.coli was found sensitive with ciprofloxacin, ceftriaxone, tobramycin and meropenam in (85.71%).

Sangeetha KT et. al, reported 100% sensitivity of E.coli with meropenam and with gentamicin, amikacin and ciprofloxacin about (87.5%). Klebsiella pneumonia was found to be sensitive with amoxi-clav, amikacin, gentamycin, cefotaxime, cefepime, ciprofloxacin, azetreonam, cotrimoxazole and meropenam in 100%³. We found E.coli sensitive with ciprofloxacin, ceftriaxone, tobramycin and meropenam in about 6(85.71%) cases and Klebsiella was 100% sensitive to ciprofloxacin and tobramycin.

CONCLUSION

Bacterial culture and its sensitivity in vaginal discharge should be done not only because of its troublesome symptoms but for its complications like subfertility, preterm delivery, ectopic pregnancy and it's increased for susceptibility for HIV and oncogenic virus. E.coli and staphylococcus were the predominant bacteria found in present study followed by Klebsiella pneumonia, streptococcus and acinetobacter. E.coli and staphylococcus aureus were both sensitive with ceftriaxone and meropenam (85.7% and 100%). Hence, these two drugs could be used for vaginal discharge; however meropenam is more expensive and can be reserved for ceftriaxone resistant cases.

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CONFLICT OF INTEREST

There is a no conflict of interest in present study.

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