

Study of Pathogens in High Vaginal Swab and CUL-DE-SAC Aspirate in Women with Pelvic Inflammatory Disease and Infertility

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ABSTRACT

Introduction: PID is a common gynaecological problem characterised by infection and inflammation of uterus, Fallopian tubes, ovaries and adjacent structures in women. Multiple species of bacteria which are common in different anatomical regions of female genital tract and responsible for causing PID. PID is mainly a disease of sexually active menstruating women. Pelvic infections have risk of causing tubal scarring, ectopic pregnancy, and chronic pelvic pain. Infertility and its associated stigma compounds the need to study this issue in developing countries.

Material and Methods: 150 samples of high vaginal swab and cul de sac aspirate were taken from clinically suspected cases of PID and infertility. Samples were examined at Microbiology department. All samples were examined for any bacterial and fungal infection by means of Gram's staining, motility test and biochemical tests.

Results: Out of these 150 cases, 114 cases were of pelvic inflammatory disease and 36 cases were of women seeking medical advice for infertility. Max. number of cases reported in PID and Infertility were found in age group of 26-35 yrs. The predominant organism isolated in PID was E.Coli (30.30%), CONS (22.72%), Staphylococcus (15.15%) followed by Klebsiella (13.63%) and Pseudomonas (9.09%). Among infertility gram positive Staphylococcus (24.32%) was most predominant followed by Klebsiella (21.62%) and then the E. coli (13.51%), Candida (21.62%) and Trichomonas (10.81%).

Conclusion: The present study has shown that PID is a polymicrobial infection. The study has also shown that incidence of PID and infertility have also associated with age, clinical sign and symptoms and complications of pregnancy.

Keywords: pelvic inflammatory disease, high vaginal swab, E. coli, Staphylococcus, Candida.

INTRODUCTION

Pelvic inflammatory disease (PID) is a clinical syndrome characterised by infection and inflammation of uterus, Fallopian tubes, ovaries and adjacent structures in women.¹ In India PID is a common gynaecological problem, other than the chronicity of lower abdominal pain in women, Infertility and its associated stigma compounds the need to study this issue in developing countries.² Few studies suggest that 24-32 percent women in India suffer from PID.³

The concept of etiology of PID has changed considerably in past few years. Although it is well established that Gonococcal (*N. gonorrhoea*) and Chlamydial (*C. trachomatis*) are major pathogens causing PID but currently there is rising incidence of non-gonococcal and non-chlamydial PID worldwide. Pathogens commonly implicated among aerobes are particularly *E.Coli*, *Klebsiella*, *Staphylococcal*, *Streptococcus*, *proteus* species etc.

The vaginal bacterial flora consists of a highly complex array of micro-organisms. The complex ecosystem can be disturbed by different endogenous and the exogenous factors.^{4,5} PID is mainly a disease of sexually active menstruating women. Pelvic infections are the most important cause of tubal infertility. It is essentially caused by body overreacting to an infection.

Women with PID have a 20 percent chance of developing infertility from tubal scarring, a 9 percent chance of having an ectopic pregnancy, and an 18 percent chance of developing chronic pelvic pain.⁶

There is paucity of information on PID due to the fact that clinical diagnosis of PID is difficult and laboratories criteria of testing is also neither highly specific nor sensitive. However, the natural genital flora of females is so varied that determining actual causative agent is difficult.

The objective of this study is to isolate and identify the causative organism of PID and infertile women of reproductive age.

MATERIAL AND METHODS

This study was carried out in the Department of Microbiology, Patna Medical Collage, Patna. 150 cases selected for this study were taken from O.P.D. and wards of the Department of Obstetrics and Gynaecology PMCH, Patna from August 2013 to September 2014.

Patients selected having sign and symptoms suggestive of Pelvic inflammatory disease as chronic pelvic pain, fever and abnormal vaginal discharge and also women seeking treatment for infertility. High vaginal swab and Pouch of Douglas aspirate were collected. Then the specimen were examined by direct smear examination under microscope and then put

S. No.	Age	PID (No-114)	Infertility (No-36)
1.	Below 25	16 (14.03%)	6 (16.66%)
2.	26-35	55 (48.24%)	20 (55.55%)
3.	36-45	31 (27.19%)	10 (27.77%)
4.	>45	12 (10.52%)	0 (0%)

Table-1: Agewise distribution of cases of P.I.D. and infertility

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S. No.	Organisms Isolated	PID (Suspected cases)	Infertility
1.	No Bacteria Grown	22 (19.29%)	10 (27.77%)
2.	Escherichia coli	40 (30.30%)	5 (13.51%)
3.	Coagulase Negative Staphylococcus [CONS]	30 (22.72%)	2 (5.40%)
4.	Staphylococcus aureus	20 (15.15%)	9 (24.32%)
5.	Klebsiella	18 (13.63%)	8 (21.62%)
6.	Pseudomonas	12 (9.09%)	1 (2.7%)
7.	Candida	8 (6.06%)	8 (21.62%)
8.	Trichomonas vaginalis	1 (0.75%)	4 (10.81%)
9.	Gardenerella/ Mobiluncus (clue cells)	3 (2.27%)	0 (0%)

Table-2: Incidence of different microorganism with P.I.D. and infertility cases.

up for culture. The samples were inoculated on Nutrient agar, Blood agar and MacConkey agar plates with gentle surface streaking. These culture medias were then incubated at 37°C for 24-48 hours. After 24 hours of incubation, isolated colonies were picked up and Gram's staining was done. Motility test and other biochemical tests were done for further identification of bacterial isolates.

Wet mount preparation was made for isolation of Trichomonas vaginalis. Bacterial vaginosis was diagnosed by Amsel's criteria. Germ tube test was performed for isolation of Candida.

RESULTS

Out of these 150 cases, 114 cases were of pelvic inflammatory disease and 36 cases were of women seeking medical advice for primary and secondary infertility. High vaginal swab were taken from 139 patients and pouch of Douglas aspirate taken from 11 cases.

Max. number of cases reported in PID and Infertility were found in age group 26-35 yrs. i.e. 48.24% and 55.55% respectively, showing good relation with the optimum reproductive life (Table 1).

In present study significant growth obtained in 118 samples, 22 out of 114 PID cases and 10 out of 36 infertile cases showed no bacterial growth (Table 2).

The predominant organism isolated in PID was E.Coli (30.30%), CONS (22.72%), Staphylococcus (15.15%) followed by Klebsiella (13.63%) and Pseudomonas (9.09%). Among fungal Candida was mostly seen, besides Trichomonas and Bacterial vaginosis was also reported.

Among infertility picture was totally different with gram positive Staphylococcus (24.32%) was most predominant followed by Klebsiella (21.62%) and then the E. coli (13.51%), Candida (21.62%) and Trichomonas (10.81%) was also reported in significant cases.

DISCUSSION

The present study showed age wise distribution of cases revealed that the maximum number of women seeking treatment were young, sexually active females of age group 26-35 yrs. Our findings concur with such findings reported earlier.⁷⁻⁹

This study also showed that in PID cases the predominant organism isolated was E.Coli, coagulase negative staphylococcus (CONS) and staphylococcus aureus followed by Klebsiella and Pseudomonas. Among fungal isolates candida cases were reported along with one case of protozoan as

Trichomonas vaginalis, and few cases of bacterial vaginosis was diagnosed. Most other workers elsewhere have also isolated bacteria and fungal isolates from PID cases.^{10,11}

Among infertility cases in present study, Staphylococcus aureus was the predominant organism isolated and the Klebsiella outnumbered E.Coli. This study is also in accordance with other workers elsewhere.¹²

Among fungal isolates, Candida reported in significant cases of infertility followed by Trichomonas vaginalis.^{11,13}

CONCLUSION

The present study has shown clearly that PID is a polymicrobial infection. Multiple species of bacteria which are common in different anatomical regions of female genital tract and responsible for causing PID. The study has also shown that incidence of PID and infertility have also associated with age, parity, clinical sign and symptoms and complications of pregnancy.

Thus the rising incidence of Pelvic inflammatory disease demands that the patients with gynaecological and obstetrical problems must be investigated thoroughly, frequently and regularly.

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