



Original article

Microbiological profile of cervix of females attending in-vitro fertilization clinic of a tertiary care hospital, North India

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ABSTRACT

Objectives: Bacterial infections of the female reproductive tract have long been recognized as having an association with infertility. Microorganisms in the female genital tract might themselves or by producing some extracellular metabolites inhibit sperm motility leading to infertility. So, microbiological screening of female genital tract is needed before in vitro fertilization (IVF) procedures. The aim of the present study was to look for the microbiological profile of cervical samples of females attending IVF clinic for infertility.

Materials and methods: The study was conducted in the Department of Microbiology, Bacteriology Division, Maulana Azad Medical College, New Delhi. Cervical swabs from the females attending the IVF clinics for infertility from January 2015 to June 2015 were screened for the bacterial isolates. The isolates were identified by standard microbiological procedures.

Results: Total 296 samples were analyzed. Majority was from females belonging to 31–40 years age group (56.4%) followed by 21–30 years (37.1%). Most of the samples (54.3%) were sterile, while normal vaginal flora and environmental contaminants were obtained from 34.7% of the samples. Various isolates obtained were, *Micrococcus* spp. (12.5%), *diphtheroids* (9%), *Non enterococcal group D streptococcus* (6.7%), *Staphylococcus aureus* (0.3%), *Coagulase negative staphylococcus* (2%), *Enterococcus* spp. (1%), *Bacillus* spp. (3%), *Escherichia coli* (5.7%), *Klebsiella* spp. (2%), *Acinetobacter* spp. (1.3%) and *Candida* spp. (2.3%).

Conclusion: Gram negative organisms in the female reproductive tract might be a cause of female infertility. There is still a need for practising proper procedure while collecting endocervical samples from females attending infertility clinic.

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1. Introduction

The “normal” flora of the reproductive tract includes varieties of *Lactobacillus* species that promotes healthy and supportive environment for the embryo in the pre- and peri conceptional period. Both by their presence and by production of lactic acid, hydrogen peroxide (H₂O₂), bacteriocins, antibiotic toxic hydroxyl radicals, and probiotics, these lactobacilli encourage a supportive environment for implantation.¹ Bacterial infections have long been recognized as having an association with infertility. However, the significance of asymptomatic infections or bacterial colonization of the female or male genital tract is less well known. Many investigators have raised the possibility that subclinical infections of the reproductive tract

might be an etiological factor in unexplained infertility.² Despite considerable progress in the assisted reproduction field, the implantation rate of the embryos remains low. This has been attributed to variable factors such as the patient’s age, endometrial receptivity, quality of the embryo and embryo transfer techniques. The upper genital tract is usually sterile, but previous studies of endometrial cultures demonstrated growth of microorganisms in the uterus.³ After trans cervical transfer of the embryo, if there is a contamination of the uterine cavity by the cervico-vaginal flora via the embryo transfer catheter tip, it can affect the implantation rates with a negative pregnancy outcome.⁴ A constant supply of sperm around the period of ovulation is required for a successful fertilization. In the meantime, the spermatozoa are being deposited in the cervix and freed constantly to the upper part of the reproductive tract.² Thus any anomaly of the cervix or the cervical secretions can cause unexplained infertility.

Thus, in our prospective study we have aimed to screen and analyze the cervical flora of infertile females who are attending in

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Table 1
Age wise distribution of patients attending infertility clinic (n = 296).

Age groups in years	Number	Percentage
<20	1	0.3%
21–30	110	37%
31–40	167	56.4%
41–50	18	6%
Total	296	100%

vitro fertilization (IVF) clinics for infertility treatment. There are many studies supporting the hypothesis that the pregnancy outcome is affected by the microbial flora of the reproductive tract at the time of embryo transfer. We hereby intend to reflect light on the cervical microbiological profile of infertile females at our tertiary care IVF setup that might in some way or other affect the pregnancy outcomes.

2. Materials and methods

In the present retrospective analysis the swabs were taken from the cervixes of 296 infertile females attending the IVF clinic from January 2015 to June 2015 with unexplained infertility. They were screened for the bacterial isolates in the Bacteriology section, Department of Microbiology of a tertiary level hospital. In unexplained infertility the women were unable to conceive after two years of unprotected coitus and other factors contributing to infertility were ruled out by clinical examination and relevant investigations. The cervical swabs were taken from only those females who had not had any antibiotic intake for at least a week. All the women selected for the study had no symptoms clinically suggestive of vaginitis or cervicitis. Samples were taken by the standard technique using sterilized cotton swabs moistened with physiological saline from the cervical area by the help of a speculum. The samples were collected in duplicate and care was taken to avoid the vaginal microflora. The samples were directly inoculated on sheep blood agar and MacConkey agar plates and

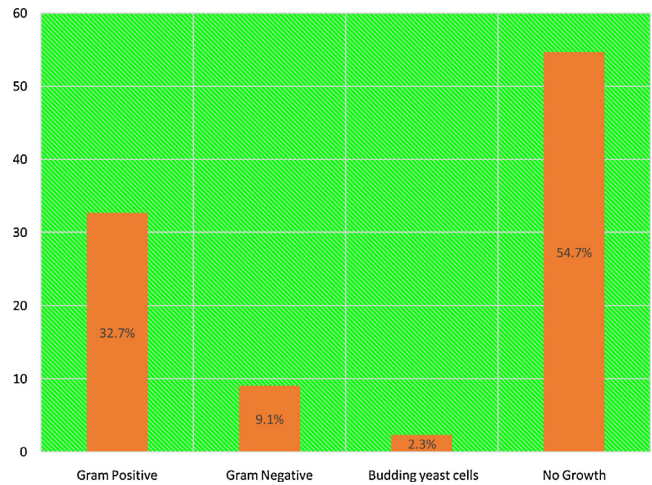


Fig. 1. Distribution of gram positive and gram negative isolates (n = 296).

they were incubated at 37 °C for 24–48 h. The plates were examined for any bacterial growth and colony morphology was studied and the isolates were identified using standard microbiological procedure.

3. Result

A total of 296 infertile females were evaluated and their age distribution is shown in Table 1. Most of the infertile females belonged to 31–40 years (56.4%) followed by 21–30 years of age (37%). The infertility amongst 41–50 years females was lesser (6%) and it was least in younger females <20 years of age (0.3%).

Out of total 296 samples majority of the samples were sterile (54.7%) without any growth. Gram positive isolates were obtained from 32.7% of the samples and gram negative isolates were seen in 9.1% of the samples. While budding yeast cells were obtained in 2.3% of the samples (Fig. 1).

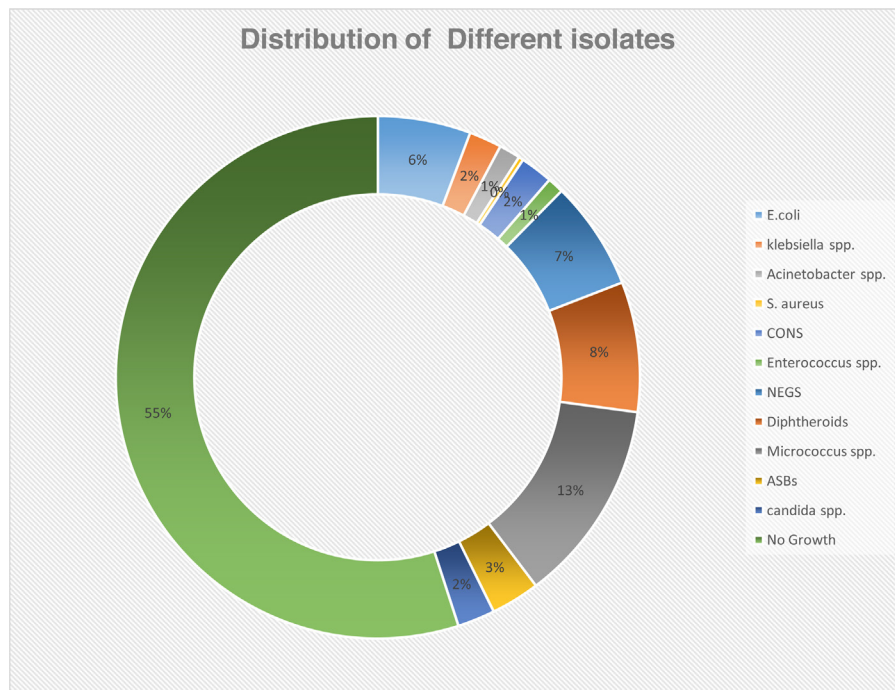


Fig. 2. Distribution of different isolates obtained from cervix of infertile females (n = 296).

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