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Analysis of vaginal infections in pregnant women: A clinical study

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Abstract

Background: The vagina could be infected by a variety of pathogens including bacteria, fungi, viruses and parasites. The present study was conducted to record the causes of vaginal infection in females.

Materials & Methods: The present study was conducted on 460 pregnant women with suspicion of symptomatic and asymptomatic vaginal infections. Vaginal and cervical swabs samples were obtained from each subject and processed immediately for possible isolation and identification of pathogenic microorganisms.

Results: Out of 460 patients, 328 (71.3%) found to be positive for vaginal infections. Age group 17- 25 years had 12% of cases, 26- 34 years had 65%, 35- 42 years had 18% and >42 years had 5% of cases. Common microorganisms were *Chlamydia trachomatis* (32%), *Candida albicans* (27%), *Mycoplasma hominis* (12%), *Gardnerella vaginalis* (10%), *Staphylococcus aureus* (6%), *Trichomonas vaginalis* (5%), *Neisseria gonorrhoea* (3%), *E. coli* (2%) and vibrio Mobiluncus (3%).

Conclusion: Vaginal infections are quite common in pregnant women. The most common are *Chlamydia trachomatis*, *Candida albicans*, *Mycoplasma hominis*, *Gardnerella vaginalis*. Routine vaginal and cervical swab sample cultures should be performed on all pregnant women to avoid developing infections.

Keywords: *Candida albicans*, *Chlamydia trachomatis*, Microorganisms

Introduction

Microbial infections of the vagina among pregnant women are serious problems. Vaginitis is inflammation of the vagina. Vulvovaginitis, is an inflammation of the vagina and vulva. Infection can result in discharge, itching and pain. The three main causes of vaginitis are infections by bacteria (bacterial vaginosis), yeast (vaginal candidiasis), or the protozoan that causes trichomoniasis. A woman may have multiple infections at any one time. If there is discomfort in the vulvovaginal area, women can request their health care providers evaluate for the presence of an infection^[1].

They can lead to serious medical complications such as preterm labor, amniotic fluid infection, premature rupture of the fetal membranes, and low birth weight of the neonate, leading to high prenatal mortality. The vagina could be infected by a variety of pathogens including bacteria, fungi, viruses, and parasites. Bacterial vaginosis (BV) is the most frequent vaginal infection, characterized by the replacement of Lactobacillus species of normal vaginal flora by the excessive growth of a mixture of microorganisms including *Gardnerella vaginalis*, Bacteroides species, genital mycoplasma, and fastidious anaerobic bacteria^[2].

A woman may have vaginal itching or burning and may notice a discharge. The discharge may be excessive in amounts or abnormal in color. Symptoms may be such as presence of infection, irritation or itching of the genital area inflammation of the labia majora, labia minora, or perineal area, vaginal discharge, foul vaginal odor, pain/irritation with sexual intercourse. Vaginal conditions could be diagnosed using known Amsel's clinical criteria including vaginal discharge appearance, pH measurement, whiff test, and clue cell on microscopy; however, these requirements alone cannot identify the cause of vaginal illness^[3]. The present study was conducted to record the causes of vaginal infection in females.

Materials & Methods

The present study was conducted in the department of Gynaecology & Obstetrics. It included 460 pregnant women with suspicion of symptomatic and asymptomatic vaginal infections. All were informed regarding the study and written consent was obtained. Ethical clearance was taken before starting the study.

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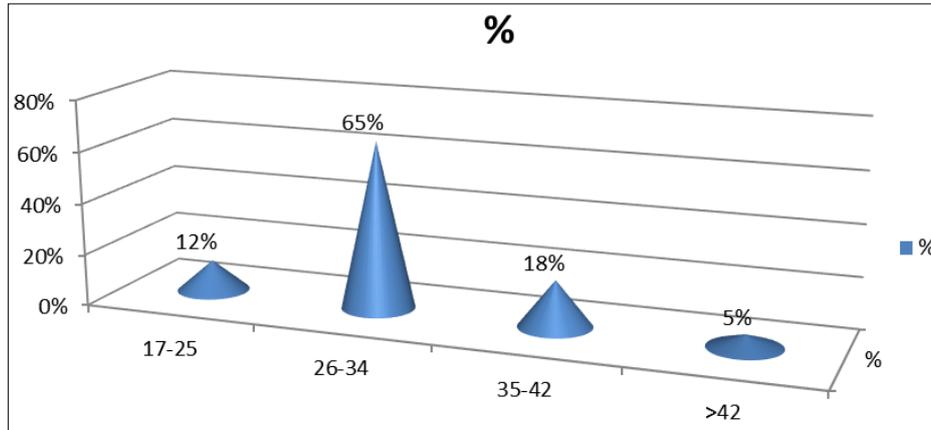
General information such as name, age, previous history of abortions, last menstrual period, and clinical signs and symptoms were recorded. Vaginal and cervical swabs samples were obtained from each subject using the standard sampling technique and were submitted to the microbiology laboratory, they were processed immediately for possible isolation and identification of pathogenic microorganisms in accordance with standard laboratory methods. Results thus obtained were subjected to statistical analysis using chi-square test. P value less than 0.05 was considered significant.

Results

Table 1: Number of vaginal infections

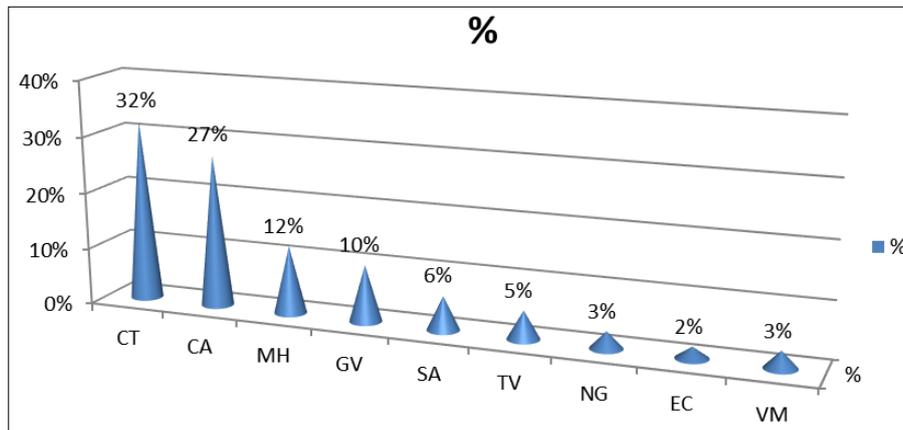
Total	Vagina infection	Percentage
460	328	71.3%

Table I shows that out of 460 patients, 328 (71.3%) found to be positive for vaginal infections.



Graph 1: Age wise distribution

Graph I shows that age group 17- 25 years had 12% of cases, 26- 34 years had 65%, 35- 42 years had 18% and >42 years had 5% of cases. The difference was significant (P<0.05).



Graph 2: Type of microorganisms

Graph II shows that common microorganisms was *Chlamydia trachomatis* (32%), *Candida albicans* (27%), *Mycoplasma hominis* (12%), *Gardnerella vaginalis* (10%), *Staphylococcus aureus* (6%), *Trichomonas vaginalis* (5%), *Neisseria gonorrhoea* (3%), *E. coli* (2%) and vibrio Mobiluncus (3%). The difference was significant (P< 0.05).

Discussion

Vaginal complaints such as BV, candidiasis, trichomoniasis, and *Chlamydia trachomatis* infections are common among women of reproductive age, with high incidences during pregnancy. Pregnant women have a twofold increase in the prevalence of vaginal microorganisms colonization compared to non-pregnant women. Increased levels of circulating estrogens and deposition of glycogen and other substrates in the vagina during pregnancy influence this association. Such large ratios of pregnant women with positive culture or vaginosis might necessitate medical

treatments and indicate the high prevalence and variations in the causal agents associated with vaginal infections [4]. The present study was conducted to record the causes of vaginal infection in females.

In this study, out of 460 patients, 328 found to be positive for vaginal infections. Age group 17- 25 years had 12% of cases, 26- 34 years had 65%, 35- 42 years had 18% and >42 years had 5% of cases. This is similar to Einarson [5]. We found that common microorganisms was *Chlamydia trachomatis* (32%), *Candida albicans* (27%), *Mycoplasma hominis* (12%), *Gardnerella vaginalis* (10%), staphylococcus aureus (6%), *Trichomonas vaginalis* (5%), *Neisseria gonorrhoea* (3%), *E. coli* (2%) and vibrio Mobiluncus (3%). This is in agreement with Tolosa *et al.* [6]

Vaginitis is the disruption of the healthy vaginal microbiota. The vaginal microbiota consists of those organisms which generally do not cause symptoms, infections, and results in good

pregnancy outcomes, and is dominated mainly by *Lactobacillus* species. The disruption of the normal microbiota can cause a vaginal yeast infection. Vaginal yeast infection can affect women of all ages and is very common. The yeast *Candida albicans* is the most common cause of vaginitis. Infectious vaginitis accounts for 90% of all cases in reproductive age women [7].

Other infections are candidiasis caused by proliferation of *Candida albicans*, *Candida tropicalis*, *Candida krusei*, bacterial vaginosis caused by increased growth of *Gardnerella*, aerobic vaginitis. Other less common infections are caused by gonorrhoea, chlamydia, *Mycoplasma*, herpes, *Campylobacter*, improper hygiene, and some parasites, notably *Trichomonas vaginalis*. Women who have diabetes develop infectious vaginitis more often than women who do not [8].

Genital mycoplasma, including *M. hominis* and *M. Ureaplasma* spp., are suspected to contribute to a number of pathological conditions such as preterm birth, premature birth, low birth weight, and perinatal morbidity and mortality [26]. In this study, the higher frequency of infection among *Mycoplasma* species isolates was due to *M. hominis* (13.8%) than to *U. urealyticum* (6.9%) infection. *M. hominis* accounted for 35% of the vaginosis cases in Nigerian women and it was regarded as the most common isolate [9].

Conclusion

Vaginal infections are quite common in pregnant women. The most common are *Chlamydia trachomatis*, *Candida albicans*, *Mycoplasma hominis*, *Gardnerella vaginalis*. Routine vaginal and cervical swab sample cultures should be performed on all pregnant women to avoid developing infections.

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