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FREQUENCY OF AEROBIC VAGINITIS AND ISOLATED ORGANISMS IN REPRODUCTIVE AGE GROUP

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Abstract:

Objective: *To determine the frequency of aerobic vaginitis and isolated organisms in reproductive age group.*

Methods and methods: *This cross-sectional study was conducted at Department Obstetrics and Gynecology Sheikh Zaid Hospital, Rahim Yar Khan from April 2019 to October 2019 over the period of 6 months. Total 178 females clinically suspicious for vaginitis having age 15-45 years were selected for this study. Aerobic vaginitis and isolated organisms were assessed in selected cases.*

Results: *Mean age of cases was 29.80 ± 8.85 years. Out of 178 cases, aerobic vaginitis was found in 80 (45%) cases. Mild aerobic vaginitis was observed in 57 (71%) cases followed by moderate in 19 (24%) cases and severe in 4 (5%) cases. Out of 80 cases of aerobic vaginitis, enterococcus faecalis was found in 23 (28.75%) cases followed by Escherichia coli in 19 (23.75%) cases, Staphylococcus aureus in 9 (11.25%) cases, CONS in 13 (16.25%) cases Klebsiella pneumonia in 7 (8.75%) cases, Pseudomonas aeruginosa in 4 (5%) cases, Acinetobacter baumanii in 3 (3.75%) cases and Enterobacter cloaca in 2 (2.5%) cases.*

Conclusion: *Results of present showed a higher percentage of aerobic vaginitis. Severity of aerobic vaginitis was mild in most cases. Most common age group was 26-35 years. Enterococcus faecalis was the most common isolated organism.*

Key Words: *Aerobic vaginitis, lactobacilli, pH, vaginal discharge, dyspareunia*

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INTRODUCTION:

Vaginitis is an inflammation of the vagina, usually characterized by any of the following: vaginal discharge containing many white blood cells (WBCs), vulvar itching, vulvar irritation, vaginal odor, vaginal erythema, dyspareunia, and dysuria.[1] The three most common causes of vulvovaginitis are bacterial vaginosis (BV), being the most prevalent one, followed by candidiasis and trichomoniasis.[2] Symptomatic vaginal discharge in the women of reproductive age group is responsible for 5- 10 million OPD visits per year throughout the world.[3]

Abnormal vaginal discharge also predisposes to significant morbidity in the form of pelvic inflammatory diseases, infertility, endometriosis, cuff cellulitis, urethral syndrome, pregnancy loss, preterm labour, increase susceptibility to sexually transmitted infections (STI), including HIV and to be associated with low birth weight and preterm birth.[4]

Females are more prone to urinary and vaginal infections because of the anatomical and functional proximity to the anal canal and due to the short urethra. The vagina could be infected by a variety of pathogens including bacteria, fungi, viruses, and parasites.[5] The causative organisms can be endogenous, iatrogenic or sexually transmitted. But, many women believe that such infections are normal and part of the female experience and do not seek care due to shame or lack of information.[6] These gynaecological disorders have substantial impact on female reproductive health, mental health, and ability to work and to perform routine physical activities. Vaginal complaints such as Vaginosis, candidiasis, trichomoniasis, and Chlamydia trachomatis infections are common among women of reproductive age, with high incidences during pregnancy.[7]

Aerobic vaginitis corresponds to a type of disturbed microflora, in which the lactobacilli are replaced by aerobic facultative pathogens like Escherichia coli (E.coli), Staphylococcus aureus, Group B streptococci (GBS), Klebsiella pneumonia, and Enterococcus species.[8] Disruptions of the vaginal ecosystem during aerobic vaginitis cause an increase in pH to >6, a decrease in lactate concentration and an increase in leucocytes and pro-inflammatory cytokines concentration in the vaginal discharge. The common presenting features are yellowish vaginal discharge and dyspareunia with red inflammation of vagina.[9]

Present study is planned to find out the frequency of aerobic vaginitis. Results of present study may help us for the early management of such cases and to decrease complications related to it.

MATERIAL AND METHODS:

This cross-sectional study was conducted at Department Obstetrics and Gynecology Sheikh Zaid Hospital, Rahim Yar Khan from April 2019 to October 2019 over the period of 6 months. Total 178 females clinically suspicious for vaginitis having age 15-45 years were selected for this study.

Patients presenting with bacterial vaginosis, trichomoniasis and candidiasis, parenteral or oral antibiotic-treated cases within one month of time, Chlamydia trachomatis cervicitis and Neisseria gonorrhoea patients were excluded from the study.

An approval was taken from institutional review committee and an informed verbal consent was taken from every patient. A complete medical history was taken with reference to the age, address, occupation, presenting complaints (type of discharge, odour, associated pain etc.), history of present illness, predisposing factors and any previous history of treatment, family history, past history, personal history were noted. In case of pregnant females, obstetric history was also taken into account.

Three high vaginal swabs (HVS) were collected for each patient. Swabs were collected by inserting it into the upper part of the vagina and rotated there for 30 seconds before removal. These swabs were sent to microbiology lab in a transport media.

The first swab was used for Gram's staining.[12] second swab for visual detection of any increased number of leukocytes and the presence or absence of lactobacilli (long rods) under microscope. AV score was determined using the criteria of Donders et al.[7] The third swab was used for inoculating media for aerobic bacterial culture (Blood agar, MacConkey agar, and Chocolate agar).

All the data were entered in SPSS version 16 and analyzed. Numerical data was presented as mean and standard deviation. Frequencies were calculated for categorical data. Data was present in form of graphs and tables.

RESULTS:

Mean age of cases was 29.80 ± 8.85 years. Out of 178 cases, aerobic vaginitis was found in 80 (45%) cases. (Fig. 1) Mild aerobic vaginitis was observed in 57 (71%) cases followed by moderate in 19 (24%)

cases and severe in 4 (5%) cases. (Fig. 2) Selected cases were divided into 3 age groups i.e. age group 15.25 years, age group 26-35 years and age group 36-45 years. Age group 15-25 years was consisted on 45 (25.28%) cases, total 103 (57.87%) cases belonged to age group 26-35 years and 30 (16.85%) cases belonged to age group 36-45 years. Aerobic vaginitis was found in 10 (22.22%) cases, 59 (57.28%) cases and 11 (36.67%) cases respectively. Statistically significant association of aerobic vaginitis with age group was noted with p value 0.000. (Table 1)

Out of 80 cases of aerobic vaginitis, enterococcus faecalis was found in 23 (28.75%) cases followed by Escherichia coli in 19 (23.75%) cases, Staphylococcus aureus in 9 (11.25%) cases, CONS in 13 (16.25%) cases Klebsiella pneumonia in 7 (8.75%) cases, Pseudomonas aeruginosa in 4 (5%) cases, Acinetobacter baumanii in 3 (3.75%) cases and Enterobacter cloaca in 2 (2.5%) cases. (Table 2)

Fig. 1: Frequency of aerobic vaginitis

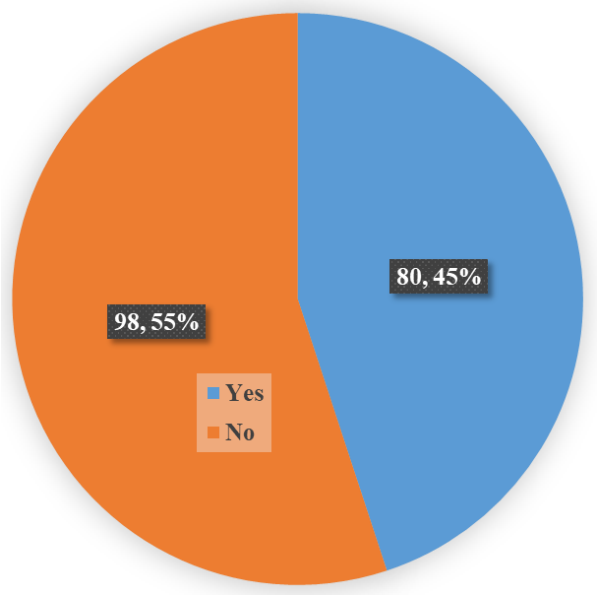

Fig. 2: Severity of aerobic vaginitis

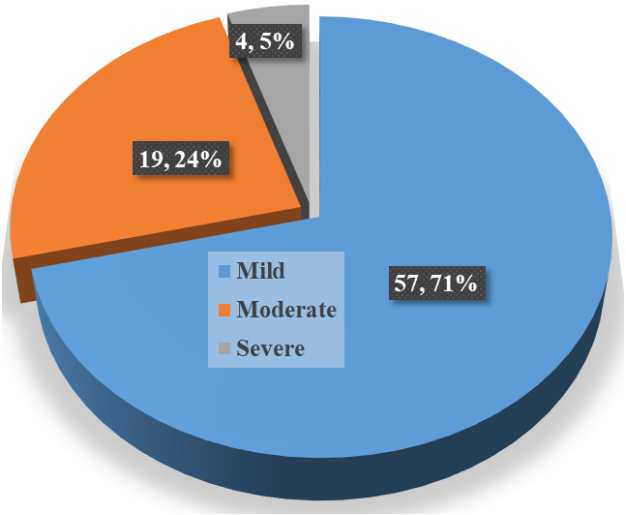

Table 1: Association of aerobic vaginitis with age groups

Age Group	Aerobic vaginitis		Total	P value
	Yes	No		
15-25	10 (22.22%)	35 (77.78%)	45 (25.28%)	0.000
26-35	59 (57.28%)	44 (42.72%)	103 (57.87%)	
36-45	11 (36.67%)	19 (63.33%)	30 (16.85%)	
Total	**80 (45%)**	**98 (55%)**	**178**	

Table 2: Frequency of isolated organisms

Organisms	N (%)
Enterococcus faecalis	23 (28.75%)
Escherichia coli	19 (23.75%)
Staphylococcus aureus	9 (11.25%)
CONS	13 (16.25%)
Klebsiella pneumonia	7 (8.75%)
Pseudomonas aeruginosa	4 (5%)
Acinetobacter baumanii	3 (3.75%)
Enterobacter cloaca	2 (2.5%)
Total	**80**

DISCUSSION:

Aerobic vaginitis was first characterized in 2002, as a vaginal condition distinct from BV, which may require different clinical management and have distinct clinical risks.[9] Like BV, AV is defined by disruption in *Lactobacillus* dominance but is accompanied by more extreme inflammatory changes than BV and the presence of mainly aerobic enteric commensals or pathogens, including Group B *Streptococcus* (*S. agalactiae*), *Enterococcus faecalis*, *Escherichia coli*, and *S. aureus*.[10] AV has been observed in 8–11% of pregnant women and in 5–24% of women reporting vaginal complaints.[11]

In certain cases, AV is associated with more genital inflammation, increased numbers of leukocytes visible in vaginal smears, with increased activity to pathogens [termed "toxic leukocytes".[12] Women with AV tend to have thinner vaginal mucosa than those with BV, with increased numbers of intermediate and parabasal cells in vaginal smears, indicative of increased turnover and desquamation of superficial epithelial cell layers.[12]

Present was aimed to determine the frequency of aerobic vaginitis and isolated organisms in reproductive age group. In our study, out of 178 cases, aerobic vaginitis was found in 80 (45%) cases. Mild aerobic vaginitis was observed in 57 (71%) cases followed by moderate in 19 (24%) cases and severe in 4 (5%) cases. Rizvi et al[13] found aerobic vaginitis in 40.8% patients which is comparable with our findings. Higher prevalence of aerobic vaginitis was observed by Ling C[14] (80%), in 2009, and by Razzak et al[8] (95.45%) in 2011, whereas Donders et al[15] reported a lower prevalence rate of aerobic vaginitis, i.e., 7.9%.

In another study by Nahar et al,[16] over 1-year period, high vaginal swabs were collected from 200 women with clinical suspicion of vaginitis. The prevalence aerobic vaginitis was 26%. Mild aerobic vaginitis was found in 80.76% patients, moderate in 15.38% cases and sever aerobic vaginitis was noted in 3.84 patients. Fan et al[17] reported frequency of aerobic vaginitis as 23.74%. Similarly in another study by Sangeetha et al[18] aerobic vaginitis was found in 20.8% patients.

In present study, out of 80 cases of aerobic vaginitis, enterococcus faecalis was found in 23 (28.75%) cases followed by Escherichia coli in 19 (23.75%) cases, Staphylococcus aureus in 9 (11.25%) cases, CONS in 13 (16.25%) cases Klebsiella pneumonia in 7 (8.75%) cases, Pseudomonas aeruginosa in 4 (5%) cases, Acinetobacter baumanii in 3 (3.75%) cases and Enterobacter cloaca in 2 (2.5%) cases. Tariq et al[19] also reported Enterococcus spp. (14.7%) and E.coli (10.2%) as the commonest bacterial vaginal pathogens.

In a study by Mumtaz et al[20] (Pakistan), S. aureus (46.07%) was the most prevalent isolated pathogen. Tansarli et al[21] and Zarbo et al[22] also reported a high prevalence of S. aureus which is 41.7% and 27.9%, respectively Fan A et al[17] observed that out of the 72 single AV cases, such bacteria as E. faecalis, E. coli and CONS were most frequently isolated. The isolation of K pneumonia in AV cases was also reported by other researchers.[18] In a study by Chowdareddy et al,[24] the pathogens derived from the

genital tract of the women with PROM were predominantly Staphylococcus aureus and Klebsiella pneumonia.

CONCLUSION:

Results of present showed a higher percentage of aerobic vaginitis. Severity of aerobic vaginitis was mild in most cases. Most common age group was 26-35 years. Enterococcus faecalis was the most common isolated organism.

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