ORIGINAL ARTICLE

Study of Vaginitis in Reproductive Age Group at THQ Hospital Jampur

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ABSTRACT

Aim: To determine the frequency of vaginitis in reproductive age group in patients presenting at THQ Hospital Jampur.

Methods: This cross sectional study was conducted at Department Obstetrics and Gynecology THQ Hospital Jampur from January 2016 to December 2016. Total 100 women with clinical suspicion of vaginitis were selected for this study. Gram' staining was done and then inoculated onto blood agar, chocolate agar and MacConkey agar and incubated aerobically at 37 0c for 24 hours. Organisms were then identified.

Results: The frequency of Aerobic vaginitis in this study was 41% and the most common affected age group was 26-30 years. Most (78%) of the cases found with mild AV. The most common organism isolated was *Enterococcus faecalis* (26.83%), followed by *Escherichia coli* (21.95%), *Staphylococcus aureus* (12.2%) and *Coagulase negative staphylococci* (14.63%).

Conclusion: Results of this study showed highest frequency of vaginal infections among young sexually active females. The frequency of culture positivity seems to decline progressively with increasing age. Maximum number of cases was diagnosed with mild AV and Enterococcus faecalis was the most common organism isolated from AV cases.

Keywords: Enterococcus faecalis,Lactobacillus, Escherichia coli, Aerobic vaginitis

INTRODUCTION

The term vaginitis is the diagnosis given to women who present with complaining of abnormal vaginal discharge with vulval burning, irritation or itching[2]. Inflammation of the vaginal mucosa, called vaginitis, is one of the most frequent complaints in women attending gynecological clinics accounting for 10 million office visits each year[3].

The leading causes of symptomatic vaginal discharge are Bacterial vaginosis, Candidiasis, Trichomoniasis. [2] Between 7% and 70% of women who have vaginal discharge complaints will have no definitive diagnosis.[2]The problem is that some forms of abnormal vaginal micro-flora are neither normal, nor can they be called bacterial vaginosis. Such forms of abnormal flora have been termed 'intermediate flora' in some studies, or been included with full-blown bacterial vaginosis in others[4,5,6]. This type of undefined abnormal flora may be of crucial importance in pregnant women at risk of preterm delivery[4,6].

Therefore, now it has been clear that the classifications of Candida vaginitis, Trichomonas vaginitis, and Bacterial vaginosis are insufficient to explain all clinical symptoms, therapy failures and the surprising outcomes of some studies on the link between some forms of bacterial flora and preterm birth rate. Such forms of abnormal vaginal flora have been termed as 'intermediate flora' and this type of abnormality as "Aerobic vaginitis"[7].

Aerobic vaginitis (AV) is defined as a disruption of the lactobacillary flora, accompanied by signs of inflammation and the presence of a rather scarce, predominantly aerobic microflora, composed of enteric commensals or pathogens**.**[8]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. 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 dyspareuniawith red inflammation of vagina[7].

The increased local production of IL-1, IL-6 and IL-8 associated with aerobic vaginitis is responsible for the increased risk of preterm delivery, premature rupture of membranes (PROM) and chorioamnionitis during pregnancy[7]. The prevention of preterm birth remains a major challenge in obstetrics. The earlier in gestation that preterm labour starts, the higher the likelihood that underlying chorioamnionitis is

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present[9]. Ascending infection during gestation may also result in maternal complications such as sepsis, septic arthritis and maternal respiratory distress[10].

These infections if not treated or ignored could debilitate the patient and could become a source of infection for the neonates especially in case of reproductive age group women. Hence the present study is designed to isolate and identify the aerobic bacterial pathogens associated with vaginitis in the reproductive age group.

MATERIAL AND METHODS

This cross sectional study was conducted at Department Obstetrics and Gynecology THQ Hospital Jampur from January 2016 to December 2016.An approval was taken from institutional review committee and an informed verbal consent was taken from every patient. Total 100 patients with symptomatic vaginal discharge having age range from 15–45 years, pregnant females, irrespective of their gestational agewere included in this study.

Patients with diagnosis of bacterial vaginosis, candidiasis and trichomoniasis, patients treated with oral or parenteral or with local application of antibiotics for at least one month before attendance to the hospital and patients with Neisseria gonorrhoea or Chlamydia trachomatis cervicitis were excluded from the analysis.

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[11]. 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)[13].

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

A total of 100 vaginal swabs collected from patients with suspicion of vaginitis were sent to laboratory for culture, out of which 41 samples yielded growth under aerobic conditions.

In present study, minimum age of the patients was 15 years and maximum age was 45 years. Most of the patients of Aerobic vaginitis (AV) belonged age group of 31-35 years (66.17%), followed by 28.57% cases in age group 15-20 years, 36.84% patients in age group 21-25 years, 53.13% patients in age group 26-30 years, 22.2% patients in age group 36-40 years and 6.67% patients in age group 41-45 years. (Table 1)

In this study, 78 cases (78%) had mild AV, 17 cases (17%) with moderate AV and only 5 cases (5%) with severe AV were detected (Fig. 1).

The most common etiological agent of Aerobic vaginitis in this study was Enterococcus faecalis (26.83%), followed by Escherichia coli (21.95%), Staphylococcus aureus (12.2%) and Coagulase negative staphylococci (14.63%), Klebsiella pneumonia (12.2%), Pseudomonas aeruginosa (4.88%), Acinetobacter baumanii (4.88%) and Enterobacter cloaca (2.44%). (Table 2)

Table 1: Age wise distribution of patients with Aerobic vaginitis

Age group (years)	Cases (n=100)	Positive cases(n=41)
15-20	7	2 (28.57%)
21-25	19	7 (36.84%)
26-30	32	17 (53.13%)
31-35	18	12 (66.17%)
36-40	9	2 (22.2%)
41-45	15	1 (6.67%)

Fig. 1: Severity of aerobic vaginitis

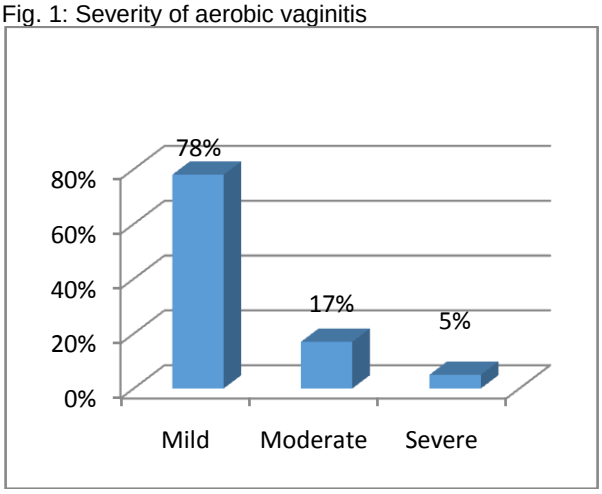

Table 2: Distribution of organisms isolated from AV cases

Organisms	Total no. of isolates	%age
Enterococcus faecalis	11	26.83
Escherichia coli	9	21.95
Staphylococcus aureus	5	12.2
CONS	6	14.63
Klebsiella pneumonia	5	12.2
Pseudomonas aeruginosa	2	4.88
Acinetobacter baumanii	2	4.88
Enterobacter cloaca	1	2.44
Total	41	100

DISCUSSION

The purpose of present study was to assess the frequency of various aerobic pathogens in vaginal infections in females in the childbearing age. The frequency of Aerobic vaginitis (AV) in this study was 41% which correlates with the study of Mumtaz et al who reported AV as 38.01%[14] Ayengar V et al also reported a culture positivity as 57%[15] Higher rate of aerobic vaginitis was observed by Ling C et al 80% and by Razzak et al (95.45%).[16,17]Fan A et al observed rate of AV as 23.74% [1] whereas Donders GG et al reported a lower rate of AV i.e., 7.9% and Donders GG reported AV as 8.3% among pregnant women[7,18]

In this study, the highest frequency of vaginal infections was seenin age group 26-30 years. These findings were in agreement with studies done by Mumtaz et al andKhan I et al[14,19]

In preset study most of the patients diagnosed with mild AV (78%). Moderate AV was noted in 17% of cases and severe AV in only 5% of cases which is in accordance with studies done by Zodzika J et al and Sobel JD et al.[20,21]

In present study, Enterococcus faecalis (26.83%) was the most prevalent organism isolated from AV cases followed by Escherichia coli (21.95%), Staphylococcus aureus (12.2%) and Coagulase negative staphylococci (14.63%). In a study by Khan I et al, Enterococcus faecalis (31%) was the most frequently isolated pathogen in Aerobic vaginitis[19]. Tariq et al also reported Enterococcus spp. (14.7%) and E.coli (10.2%) as the commonest bacterial vaginal pathogens[22].

Fan A et al observed that out of the 72 single AV cases, such bacteria as E. faecalis, E. coli and CONS were most frequently isolated.[1] The isolation of K pneumonia in AV cases was also reported by other researchers.[13,15]In a study by Chowdareddy et al, the pathogens derived from the genital tract of the women with PROM were predominantly Staphylococcus aureus and Klebsiella pneumonia[23].

Pseudomonas aeruginosa and Acinetobacter baumanii were isolated in 5% and 3.33% respectively. These organisms were also reported as vaginal pathogens by Mumtaz et al[14]. These bacteria had been isolated especially from women suffering from offensive odour and from vaginal discharge, besides, from non-pregnant women using intrauterine device. It is potentially opportunistic bacteria within the vagina. Such microorganism may become an increasing prevalent upon minor alterations of the vaginal environment. Other investigators have also isolated these bacteria from cases of vaginitis[24].

CONCLUSION

Results of this study showed highest frequency of vaginal infections among young sexually active females. The frequency of culture positivity seems to decline progressively with increasing age. Maximum number of cases was diagnosed with mild AV and Enterococcus faecalis was the most common organism isolated from AV cases.

REFERENCES

1. Fan A, Yue Y, Geng N, Zhang H, Wang Y, Xue F. Aerobic vaginitis and mixed infections: comparison of clinical and laboratory findings. Arch Gynecol Obstet. 2013 Feb;287(2):329–35.
2. Schorge J, Schaffer J, Halvorson L, Hoffman B, Bradshaw K, Cunningham F.G. Williams Gynecology, Second Edition, New York : McGraw-Hill Company; 2012. Chap 3: p. 547.
3. Forbes BA, Daniel FS, Alice SW. Baily and Scott's diagnostic microbiology. 12th ed. USA: Mosby Elsevier Company; 2007.p.860.
4. Hay PE, Lamont RF, Taylor-Robinson, Morgan DJ, Ison C, Pearson C. Abnormal bacterial colonization of the genital tract and subsequent preterm delivery and late miscarriage. BMJ 1994; 308:295– 298.
5. McDonald HM, O'Loughlin JA, Jolley PT, Vigneswarab R, McDonald PJ. Changes in vaginal flora during pregnancy and association with preterm birth. J Inf Dis 1994;170:728– 732.
6. Rosenstein IJ, Morgan DJ, Sheehan M, Lamont RF, Taylor-Robinson D. Effect of topical clindamycin on bacterial vaginosis and outcome of pregnancy. Paper presented at: Second International Meeting on Bacterial Vaginosis; Sept 17-19, 1998; Aspen, CO.
7. Donder GG, Vereecken A, Bosmans E, Dekeersmaecker A, Salembier G, Spitz B. Definition of a type of abnormal vaginal flora that is distinct from bacterial vaginosis: aerobic vaginitis. BJOG 2002; 109: 34–43.
8. Donders G, Bellen G, Rezeberga D. Aerobic vaginitis in pregnancy. BJOG. 2011 Sep;118(10):1163–70.
9. Martius J, Eschenbach DA. The role of bacterial vaginosis as a cause of amniotic fluid infection,

chorioamnionitis and prematurity—a review. Arch Gynecol Obstet 1990;247:1–13.
10. Garland SM, Ni CF, Satzke C, Robins-Browne R. Mechanisms, organisms and markers of infection in pregnancy. J Reprod Immunol 2002;2:169–83.
11. Mackie TJ, McCartney JE. Laboratory strategy in the diagnosis of infective syndromes. In: Collee JG, Fraser AG, Marmion BP, Simmons A, editors. Practical Medical Microbiology.14th ed. Edinburg: Churchill livingstone; 2006. p.74.
12. Mackie TJ, McCartney JE. Laboratory strategy in the diagnosis of infective syndromes. In: Collee JG, Fraser AG, Marmion BP, Simmons A, editors. Practical Medical Microbiology.14th ed. Edinburg: Churchill livingstone; 2006. p.796.
13. Forbes BA, Daniel FS, Alice SW. Baily and Scott's diagnostic microbiology. 12th ed. USA: Mosby Elsevier Company; 2007.p.867.
14. Mumtaz S, Ahmed M, Aftab I, Akhtar N, UlHassan M, Hamid A. Aerobic vaginal pathogens and their sensitivity pattern. J Ayub Med Coll Abbottabad 2008; 20(1):113-117.
15. Ayengar V, Madhulika, Vani S N. Neonatal sepsis due to vertical transmission from maternal genital tract. Ind Jr of Pediatr 1991; Vol 58: 661-664.
16. Cheng Ling, Wang JiaYi. The vaginal micro-flora of aerobic vaginitis and bacterial vaginosis. Zhongguo Weishengtaxixue Zazhi / Chinese Journal of Microecology. 2009;21(12):1107–9.
17. Razzak MSA, Al-Charrakh AH, AL-Greitty BH. Relationship between lactobacilli and opportunistic bacterial pathogens associated with vaginitis. North Am J Med Sci 2011; 3: 185-192.
18. Donders GG, Van CK, Bellen G, Reybrouck R, Van den Bosch T, Riphagen I, et al. Predictive value for preterm birth of abnormal vaginal flora, bacterial vaginosis and aerobic vaginitis during the first trimester of pregnancy. Br J Obst Gynecol 2009;116:1315–24.
19. Khan I, Khan UA. A hospital based study of frequency of aerobic pathogens in vaginal infections. J Rawal Med Coll.2004; 29 (1):22-25.
20. Zodzika J, Jermakowa I, Rezeberga D, Vasina O, Vedmedovska N, Donders GG. Factors related to elelvated vaginal pH in the first trimester of pregnancy. Acta Obstet Gynecol Scand 2011;90: 41–6.
21. Sobel JD, Reichman O, Misra D, Yoo W. Prognosis and Treatment of Desquamative Inflammatory Vaginitis. Obstet Gynecol 2011; 117: 850-855.
22. Tariq N, Jaffery T, Ayub R, Alam AY, Javid MH, Shafique S. Frequency and antimicrobial susceptibility of aerobic bacterial vaginal isolates. J Coll Physicians Surg Pak. 2006 Mar;16(3):196-9.
23. N Chowdareddy, Y C Anil Kumar, Bhimalli S. The correlation between maternal cervical swab culture and early onset neonatal infection in premature rupture of membranes. Intern Jr of Basic and App Med Sci 2013 Vol. 3 (2) May-August, pp.133-135.
24. Takeyama K, Kunishima Y, Matsukawa M, Takahashi S, Hirose T, Kobayashi N, Kobayashi I, Tsukamoto T. Multidrug-resistant Pseudomonas aeruginosa isolated from urine of patients with urinary tract infection. J Infect Chemother 2002; 8: 59-63.