Content available at: https://www.ipinnovative.com/open-access-journals

Indian Journal of Obstetrics and Gynecology Research

Journal homepage: www.ijogr.org

Original Research Article

Estimation of incidence of Aerobic vaginitis in women presenting with symptoms of vaginitis

Veena Vidyasagar[1,*]

[1]*Dept. of Obstetrics and Gynaecology, The Oxford Medical College, Hospital and Research Centre, Bangalore, Karnataka, India*

ARTICLE INFO

Article history:
Received 06-05-2020
Accepted 23-11-2020
Available online 13-03-2021

Keywords:
Aerobic vaginitis
Bacterial vaginosis
Candidiasis
Trichomoniasis

ABSTRACT

Aim: Vaginitis is found to be quite common among women who present in Gynecology OPD. Aerobic vaginitis is one of the causes of vaginitis which is typically marked by either an increased inflammatory response or by prominent signs of epithelial atrophy or both. The main aim of the study was to analyze the signs, symptoms and laboratory investigations among women presenting with symptoms of vaginitis.

Materials and Methods: The study consisted of 155 cases of women presenting with symptoms of vaginitis. Brief general, systemic and detailed gynecological examinations were done and analysed.

Results: The incidence of Aerobic vaginitis in the study group was observed to be 7.74%. All cases of Aerobic vaginitis had unusual vaginal discharge as the presenting symptom. It was observed that 50% of cases had additional complaints of pruritus vulvae and vaginal irritation while 25% cases had complaints of dysuria and dyspareunia. pH of vaginal smears of these cases varied from 6 to 10, average being 7.75. On Gram staining, there were moderate to plenty number of pus cells and few to moderate number of epithelial cells. Organisms grown included Coagulase negative Staphylococci; Streptococci and Klebsiella species. Other causes of vaginitis included Candida - 14.19%, Trichomoniasis - 6.45% and Bacterial vaginosis 7.09%.

Conclusion: The study concluded that the incidence of Aerobic vaginitis in the present study was less as compared to other studies. It is advisable to do culture with an antimicrobial sensitivity to find out the cause of vaginitis especially in cases presenting with recurrent symptoms of vaginitis. The type of antibiotics used to treat vaginitis must be very selective in order not to kill the beneficial bacteria that help in preservation of vaginal health and ecosystem.

1. Introduction

Vaginitis is a common condition with which women present in Gynecology OPD. Most of the time, the diagnosis is based only on history and clinical examination. The treatment is usually based on history and clinical findings which may not always be accurate. There are various causes of vaginitis. Sometimes, the cause is a single organism and at times, it may be as a result of mixed infection. Common causes of vaginitis among adults include Candidiasis, Trichomoniasis and Bacterial vaginosis. The term Aerobic vaginitis (AV) as a cause of vaginitis was coined few years back. It was first described by Donders et al., in 2002.[1,2] The diagnosis of Aerobic vaginitis is characterized by increased levels of aerobic bacteria, vaginal inflammation and depressed levels of lactobacilli.[3] Aerobic vaginitis (AV) is a vaginal infectious condition which is often confused with bacterial vaginosis (BV) or with the intermediate microflora as diagnosed by Nugent's method to detect BV on Gram-stained specimen. Patients with AV present with distinct clinical signs and symptoms of abnormal vaginal flora that can be confused with common etiologies of vaginitis such as bacterial vaginosis, vulvo vaginal candidiasis and trichomonas vaginalis. Aerobic vaginitis

* *Corresponding author*.
E-mail address: drveenavid9@gmail.com (V. Vidyasagar).

https://doi.org/10.18231/j.ijogr.2021.016

is typically marked by either an increased inflammatory response or by prominent signs of epithelial atrophy or both. The latter condition, if severe, is also called as desquamative inflammatory vaginitis.

Incidence of aerobic vaginitis varies from 5% to 80% in different studies. It has been shown to have an association with miscarriage and preterm labor and delivery. Inflammation derived from the cervicovaginal environment (vaginitis) and urinary tract infections are known to be associated with triggering labor. Aerobic vaginitis is treated with a course of antibiotics characterized by an intrinsic activity against the majority of bacteria of fecal origin. The treatment is different from the usual antimicrobials like metronidazole (BV, TV) and antifungal (VVC) agents used to treat common vaginitis. The condition requires treatment based on microscopy findings and a combined local treatment with any of the following which may yield the best results: antibiotic (infectious component), steroids (inflammatory component), and/or estrogen (atrophy component). The use and choice of antibiotics to diminish the load/proportion of aerobic bacteria is still a matter of debate. The use of local antibiotics, preferably local non-absorbable and broad spectrum, covering enteric gram-positive and gram-negative aerobes, like kanamycin can be an option. In some cases, systemic antibiotics can be helpful, such as amoxyclav or moxifloxacin. Vaginal rinsing with povidone iodine can provide rapid relief of symptoms but does not provide long-term reduction of bacterial loads. The study was aimed to analyze the signs, symptoms and laboratory investigations among women presenting with symptoms of vaginitis. The study would also focus on the frequency and clinical characteristics of Aerobic Vaginitis in the local population.

2. Materials and Methods

Women presenting in Gynecology OPD with symptoms of vaginitis were studied. The symptoms taken into consideration included unusual vaginal discharge, vulvar itching, vulvar irritation, vulvar odor, painful micturition and dyspareunia. The study was conducted at East Point College of Medical Sciences and Research, Bangalore from February 2018 to November 2018. Patients presenting with symptoms of vaginitis were explained about the study with 'Patient information sheet'. Only sexually active patients reporting to OBG OPD between ages of 18 and 65 years were included in the study. Informed consent of all the patients for the study was taken. The study was performed under the ethical guidelines of the Institutional Ethical Committee. Pregnant, Immunocompromised and mentally retarded patients were excluded from the study. Detailed history regarding symptoms of vaginitis and other relevant history was taken. Brief general, systemic and detailed gynecological examinations were done. Specimen collected included pH estimation of the vagina, saline wet mount, Gram stain, High vaginal swab for culture, Pap smear and Random blood sugar. Specimen for saline wet mount, Gram stain and high vaginal swab for culture and antibiotic sensitivity was handed over to Microbiologist for analysis immediately after collection. Smears taken for Pap smear were sent to pathologist.

3. Results

The study consisted of 155 cases of women presenting with symptoms of vaginitis. The incidence of Aerobic vaginitis in the present study was 7.74% (Table 1). None of the cases had severe form of Aerobic vaginitis. Age group of women diagnosed as Aerobic vaginitis were between 29 and 35 years. All cases of Aerobic vaginitis had unusual vaginal discharge as the presenting symptom; 50% of cases had additional complaints of pruritus vulvae and vaginal irritation. 25% cases had complaints of dysuria and dyspareunia. Presenting symptoms in other cases was unusual vaginal discharge – 79.35%, vulvar itching – 56.13%, vulvar irritation– 36.48%, vulvar odour – 29.03%, dysuria – 13.55% and dyspareunia – 29.03%. All the cases with the diagnosis of Aerobic vaginitis had mild anaemia. 50% of cases had signs of mild vaginitis. In other cases, vagina appeared healthy. pH of vaginal smears of these cases varied from 6 to 10, average being 7.75. On Gram staining, there were moderate to plenty number of pus cells and few to moderate number of epithelial cells. Organisms grown included Coagulase negative Staphylococci; Streptococci and Klebsiella species. There was growth of Candida in 2 cases having aerobic bacterial growth. Antibiotics for which Coagulase negative Staphylococci were sensitive included Clindamycin, Ciprofloxacin, Erythromycin, Cefoxitin, Gentamycin, Chloramphenicol, Tetracycline and Cotrimoxazole, Streptococci were sensitive to Amoxycillin, Cotrimoxazole and Ampicillin. Klebsiella was sensitive to Amikacin, Levofloxacin, Ceftriaxone, Imipenem, Cefazolin, Meropenem and Piperacillin. Majority of cases of Aerobic vaginitis showed presence of intermediate squamous cells on Pap smear. There were few superficial and parabasal cells. All cases were negative for intraepithelial lesion for malignancy. None of the cases of Aerobic vaginitis had raised blood sugar levels. All cases were administered antibiotics as per the sensitivity test and all of them responded. There was no recurrence.

Other causes of vaginitis (diagnosed on Culture/ Pap smear) included Candida - 14.19%, Trichomoniasis - 6.45% and Bacterial vaginosis 7.09% (Table 1). In two cases, both Trichomoniasis and Bacterial vaginosis was evident. The diagnosis of other causes of vaginitis was based on Gram staining, culture and Pap smear. Age group of women with diagnosis of Candidiasis was between 24 and 48 years. Presenting symptoms were unusual

Table 1: Representing the frequency and percentage of patients diagnosed with Aerobic vaginitis, Candida, Trichomoniasis and Bacterial vaginosis daignosed on culture/pap smear

Type of infection	Frequency	Percentage
Aerobic vaginitis	12	7.74%
Candida	22	14.19%
Trichomoniasis	10	6.45%
Bacterial vaginosis	11	7.09%

Table 2: Representing the various symptoms of patients diagnosed with Aerobic vaginitis, Candidiasis, Trichomoniasis, Bacterial vaginosis

Symptoms	Aerobic vaginitis (n=12)	Candidiasis (n=22)	Trichomoniasis (n=10)	Bacterial vaginosis (n=11)
Unusual vaginal discharge	12 (100%)	16 (72.72%)	10 (100%)	11 (100%)
Vulvar itching	6 (50%)	16 (72.72%)	10 (100%)	8 (72.73%)
Vulvar irritation	6 (50%)	12 (54.55%)	7 (70%)	6 (54.55%)
Vulvar odour	0 (0%)	4 (18.18%)	10 (100%)	6 (54.55%)
Dysuria	3 (25%)	2 (9.09%)	3 (30%)	2 (18.2%)
Dyspareunia	3 (25%)	12 (54.55%)	3 (30%)	6 (54.55%)

vaginal discharge in 72.72% cases, vulvar itching in 72.72% cases, vulvar irritation in 54.55% cases, vulvar odour in 18.18% cases, dysuria in 9.09% cases and dyspareunia in 54.55% cases (Table 2). Average pH of vaginal smears in cases of Candidiasis was 6.64. Pap smear picture in these cases included presence of filamentous pseudophyte morphologically consistent with Candida, dense polymorphs, presence of both superficial and intermediate cells and few to occasional parabasal cells. The age of women diagnosed as Trichomoniasis was between 28 and 55 years. All of these women had presented with symptoms of unusual vaginal discharge, vulvar itching and vulvar odor; 70% presented with symptom of vulvar irritation, 30% presented with symptoms of dysuria and dyspareunia (Table 2). Average pH of vagina in cases of Trichomoniasis was 8.4 (which is higher than that of Aerobic vaginitis). In Trichomoniasis there was admixture of superficial and intermediate cells with occasional to few parabasal cells on Pap smear. Women above 50 years showed predominance of parabasal cells. In cases diagnosed as Bacterial Vaginosis age of women was between 25 and 46 years. All women detected to have Bacterial vaginosis had presented with unusual vaginal discharge, 72.73% presented with vulvar itching, 54.55% had presented with vulvar irritation, 54.55% with vulvar odor, 18.2% with dysuria and 54.55% cases presented with dyspareunia (Table 2). Average pH in cases of Bacterial vaginosis was 7.09. Average pH in cases where cause of symptoms could not be detected was 7.55 and it was 7.1 where normal vaginal flora was grown on culture.

4. Discussion

The prevalence of Aerobic vaginitis in the present study was 7.74% among cases presenting with symptoms of vaginitis viz. unusual vaginal discharge, vulvar itching, vulvar irritation, vaginal odour, dysuria and dyspareunia. The incidence of Aerobic vaginitis was 26% in series by Nahar D et al.,[4] the incidence of the condition was determined among suspected cases of vaginitis on clinical examination. In series of Fan A et al.,[5] in China, the incidence of Aerobic vaginitis was 23.74% and Sangeetha et al.,[6] reported culture positivity of 20.8%. Even higher prevalence of Aerobic vaginitis was observed by Ling C (80%)in 2009,[7] whereas Donders et al., in 2002[2] reported a lower prevalence rate of Aerobic vaginitis at 7.9%. 75% cases in the present study yielded single bacterial growth and 25% of cases showed mixed infection. In series by Nahar D et al.,[4] 92. 31% of cases, showed single bacterial growth and 7.69% yielded multiple organisms on culture. In study by Sangeetha et al.,[6] single bacterial growth was detected in 88.77% and 19.23% had multiple infection. In the study done by Razzak et al.,[8] 50 (47.62%) had single growth of Aerobic organisms and 105 cases (52.38%) had mixed infection. There is a large variation in the studies quoted as regards to incidence of Aerobic vaginitis and number of organisms on culture. In the present study, Coagulase negative Staphylococci were grown in 50% cases, Streptococci in 25% cases and Klebsiella in 25% cases. In series by Nahar D et al.,[4] S. aureus (41.07%) was the most prevalent organism isolated followed by E. coli (21.43%), Enterococcus spp. (12.5%) and β-hemolytic streptococci in 8.93% cases. In study by Mumtaz et al.[9] S. aureus (46.07%) was the most prevalent isolated pathogen. Tansarli et al.,[10] and Zarbo et al.,[11] also reported high prevalence of S. aureus which is 41.7% and 27.9%, respectively. The most common organism isolated in study by Sangeetha et al.,[6] was Enterococcus faecalis (32.26%), followed by Escherichia coli (25.8%), Staphylococcus

aureus (19.35%) and β-hemolytic streptococci (9.68%).

5. Conclusion

The prevalence of Aerobic vaginitis in patients presenting with symptoms of vaginitis was studied. The incidence of Aerobic vaginitis in the present study was less as compared to other studies. It is advisable to do culture with an antimicrobial sensitivity to find out the cause of vaginitis especially in cases presenting with recurrent symptoms of vaginitis. The type of antibiotics used to treat vaginitis must be very selective in order not to kill the beneficial bacteria (Lactobacilli) that help in preservation of vaginal health and ecosystem. The currently available data suggest that the possible prevalence of Aerobic vaginitis is considerable. Patients presenting with symptoms of vaginitis should therefore be properly investigated and then treated especially in suspected cases of recurrent vaginitis.

6. Source of Funding

None.

7. Conflict of Interest

The authors declare that there is no conflict of interest.

Acknowledgements

The authors in this study would like to acknowledge the East Point College of Medical Sciences and Research, Bangalore, for providing the necessary infrastructural facilities for conducting the study. The author would also like to acknowledge Department of Microbiology and Pathology for performing relevant investigations.

References

1. Jahic M, Mulavdic M, Nurkic J, Jahic E, Nurkic M. Clinical Characteristics of Aerobic Vaginitis and Its Association to Vaginal Candidiasis, Trichomonas Vaginitis and Bacterial Vaginosis. *Med Arch*. 2013;67(6):428. doi:10.5455/medarh.2013.67.428-430.
2. Donders GGG, 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. *Int J Obstet Gynaecol*. 2002;109(1):34–43. doi:10.1111/j.1471-0528.2002.00432.x.
3. Murina F, Vicariotto F, Francesco SD. SilTech: A New Approach to Treat Aerobic Vaginitis. *Adv Infect Dis*. 2016;06(03):102–6. doi:10.4236/aid.2016.63013.
4. Nahar D, Soni G, Chand AE. Bacterial Etiology and their Antibiogram in Aerobic Vaginitis Patients at Tertiary Care Hospital. *In J Sci Study*. 2016;4(3):103–10.
5. 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;287(2):329–35.
6. Sangeetha KT, Golia S, Vasudha CL. A study of aerobic bacterial pathogens associated with vaginitis in reproductive age group women (15-45 years) and their sensitivity pattern. *Int J Res Med Sci*. 2015;3(9):2268–73. doi:10.18203/2320-6012.ijrms20150615.
7. Cheng L, Wang J. The vaginal micro-flora of aerobic vaginitis and bacterial vaginosis. *Chin J Microecol*. 2009;21(12):1107–9.
8. Razzak M, Al-Charrakh A, Greitty BAL. Relationship between lactobacilli and opportunistic bacterial pathogens associated with vaginitis. *N Am J Med Sci*. 2011;3(4):185–92. doi:10.4297/najms.2011.3185.
9. Mumtaz S, Ahmad M, Aftab I, Akhtar N, Hassan M, Hamid A. Aerobic vaginal pathogens and their sensitivity pattern. *J Ayub Med Coll Abbottabad*. 2008;20(1):113–7.
10. Tansarli GS, Kostaras EK, Athanasiou S, Falagas ME. Prevalence and treatment of aerobic vaginitis among non-pregnant women: evaluation of the evidence for an underestimated clinical entity. *Eur J Clin Microbiol Infect Dis*. 2013;32(8):977–84. doi:10.1007/s10096-013-1846-4.
11. Coco L, Pagano I, Zarbo R, Zarbo G. W073 AEROBIC VAGINITIS DURING PREGNANCY. *Int J Gynecol Obstet*. 2012;119(2):S728. doi:10.1016/s0020-7292(12)61798-6.

Author biography

Veena Vidyasagar, Professor

Cite this article: Vidyasagar V. Estimation of incidence of Aerobic vaginitis in women presenting with symptoms of vaginitis. *Indian J Obstet Gynecol Res* 2021;8(1):82-85.