

Bacterial Vaginosis in Gynecologic Outpatient Clinic Dr. Soetomo Hospital January – June 2017: A Cross Sectional Study

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Abstract: Bacterial vaginosis (BV) is a common cause of vaginal discharge in women without a sign of inflammatory. BV prevalence in Indonesia is around 17-32.5%, and most are women of reproductive age. To determine the characteristics of patients with bacterial vaginosis. In this cross-sectional study, we include 113 medical records of patients with whitish vaginal discharge complaints that accompanied by the results of vaginal swab and Nugent Score at Gynecology outpatient clinic Dr Soetomo Hospital, period January 2017 to June 2017. Prevalence of BV in this study is 11,5%. The productive age of 15-64 years dominates as many as 112 patients (99.1%), with 96% patients married, and 10% already in menopause stated. The most frequent symptoms found was vaginal itching (59.3%). The use of vaginal douching was found in 60% of patients. The patients parity averaged 0-1 (nullipara and primiparity) were 40%. From the risk factor, we found that 88% of patients did not smoke, majority of contraceptive methods used were IUDs of 49%, and the average patient BMI status was overweight. Most comorbid infections found was candidiasis (20 patients). About 76 patients (78.4%) show good response to therapy by expressed negative BV with Nugent score criteria. BV cases show a small prevalences in our gynecology outpatient clinic, but have a significant morbidity to patients. Appropriate management is needed to improve healing rates and reduce the rate of bacterial vaginosis recurrence.

1 INTRODUCTION

Bacterial vaginosis (BV) is the most common cause of vaginal discharge in reproductive age women. Symptoms are generally characterized by vaginal discharge (most colored gray to yellow), thin, homogeneous, smelling, and accompanied by increased vaginal pH. BV is not an inflammatory process, so the diagnosis is supported by several simple clinical and laboratory criteria (Karim, 2016).

Bacterial vaginosis is a disease in the vagina, caused by disturbance of normal environment of vagina and vaginal microbiota population. In most BV cases there are overgrowth of anaerobic bacteria such as *Garnerella sp*, *Prevotella sp* and *sp Atopobium*. and commonly affects reproductive age women. BV infections increases the risk of type 2 HSV infection, *Trichomonans vaginalis*, *Neisseria gonorrhoeae*, *Chlamydia trachomatis* and HIV. The prevalence of BV in Indonesia is around 17- 32.5%,

relatively high comparing to other southeast asian countries such as Thailand 11.5 to 15.9%; Philippines 7.5%; and Vietnam from 7 to 27.4%. The risk factors of BV including multipartner sexual activity, the use of IUDs, ethnicity, use of douching product, smoking, menstruation, uncircumcised patner, malnutrition, stress and genetic factors (Kenyon, Colebunders and Crucitti, 2013)

Gram smear is a standard examination for diagnosing BV, with sensitivity of 62-100% This examination is evaluated by Nugent criteria. (Nugent, Krohn and Hillier, 1991) However, the data of the prevalence, characteristic and risk factor of BV patients in Gynecology Outpatient clinic, have never been reported. Because BV is the most common vaginal discomfort, investigation of risk factor BV is important to decide a proper management for BV patient.

2 METHODS

This research is an analytic observational study with cross-sectional design to determine the characteristics and risk factors of BV in our outpatient clinic. The study was conducted in Gynecology Outpatient Clinic Dr Soetomo Hospital Surabaya, in July-September 2017. Data was collected from January to June 2017 from medical records (secondary data). Sampling were obtained with consecutive sampling method, with the inclusion criteria were all patients with complain of excessive vaginal discharge (flour albus), who had a vaginal swab examination, and then assessed by Nugent criteria. Data collected consist of age, marital status, chief complaints, use of vaginal

douching, education, patient origin, parity, smoking, contraceptive methods, BMI (Body Mass Index), therapy category, comorbidity, menopausal status, Nugent score, and relapse after Nugent score. The specific data collected includes the therapeutic response and the factors associated with bacterial vaginosis. Data were analyzed statistically using SPSS program (Statistical Product and Service Solutions) no 23. Comparison between groups was performed by using the Chi-square test or Fisher's exact test for the categorical variables. Odds ratios and 95% confidence intervals were calculated. Values of $p < 0,05$ were considered statistically significant.

Table 1: Characteristics of Patients with symptoms of excessive vaginal discharge in Gynecology Outpatient Clinic of Dr Soetomo Hospital (January-June 2017).

Variables	n (%)	median	Variables	n (%)	median
Age (years)		31	BMI		
<15 years	0 (0)		Underweight	9 (7.9)	
15-64	112 (99.1)		Normal	28 (24.7)	
> 64 years	1 (0.9)		Overweight	37 (32.7)	
Menopause status			Obesity 1	29 (25.6)	
Yes	11 (10)		Obesity 2	8 (7)	
No	102 (90)		Obesity 3	2 (1.7)	
Originally patient			Category therapy		
In the city	61 (54)		Metronidazole po	33 (29.2)	
Out of town	52 (46)		Metronidazole ovule	39 (34.5)	
Etnicity patients			Metronidazole		
Java	77 (68)		Combination po and	36 (31.8)	
Madura	32 (28)		ovules		
Etc	4 (4)		The combination of		
Marital status			po Metronidazole,	5 (4.4)	
Married	108 (96)		Clindamycin ovules		
Single	5 (4)		and po		
Accompanying symptoms			Combination +		
Vaginal odor	62 (54.8)		probiotics	36 (31.8)	
Vaginal itching	67 (59.2)		The combination of		
Vaginal irritation	3 (2.6)		nystatin	13 (11.5)	
Dispareuni	5 (4.4)		Comorbid patients		
Vaginal douching			Prolapsed uteri	4 (3.5)	
Yes	68 (60)		HIV	4 (3.5)	
No	45 (40)		Inf Gonorrhea	0 (0)	
Education			Inf Trichomoniasis	0 (0)	
≤ SMP	37 (32.7)		Inf Candidiasis	20 (17.6)	
High School	59 (52.2)		Nugent score		
Bachelor	17 (15)		Before therapy		
Parity			0-3	16 (14.1)	
0/1	45 (39.8)		4-6	68 (60.2)	
2	39 (34.5)		7-10	29 (25.6)	
≥ 3	29 (25.6)		After Nugent score therapy		
Smoker			0-3	92 (81.5)	

Yes	13 (12)		4-6	21 (18.5)
No	100 (88)		7-10	0 (0)
Contraception			Recurrence after normal Nugent score	
IUD	26 (23)		<3 months	11 (9.7)
Injectable	15 (13.2)		3-6 months	25 (22.1)
Pill	2 (1.7)		> 6-12 months	20 (17.6)
Condom	9 (7.9)		> 12 months	16 (14.2)
Sterile	1 (0.8)		Never relapse	41 (36.4)
No	60 (53)			

3 RESULTS

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After treatment, re-examination of the Nugent score was performed to evaluate the effectiveness of therapy. The results showed 92 patients (81.5%) had a nugen score 0-3, and 21 patients (18.5%) had a nugen score >3. Good response was categorized if Nugent score become 0-3 after therapy. The most common complaint from all patients with positive BV, had symptoms vaginal discharge (89,7%), vaginal odor (56,7%) and vaginal itching (59,8%). But in this study, there was no significantly associated with bacterial vaginosis.

4 DISCUSSION

In this study BV positive cases were found in 97 patients who constitute prevalence of 11.5% in Gynecology Outpatient Clinic Dr Soetomo Hospital. 99.1% of patients were on their productive age, around 15-64 years old. This finding is consistent with previous study, that women on productive age is a risk factor for BV. And over 40 years old women is also a risk factor for BV, due to hypoestrogen state on perimenopausal period. Decrease estrogen levels can increase vaginal pH, leading to suboptimal environment for the growth of *Lactobacillus spp.* (vaginal normal flora), but in contrast excessive growth of other microorganisms. Petricevic et al in his study also found that the levels of vaginal *Lactobacillus spp.* decreases with age, supporting the higher risk of BV in older women (Karim, 2016) (Kenyon, Colebunders and Crucitti, 2013)

Most patients (96%) were married, consistent

Table 2: Risk Factors Associated with BV.

Risk factor	BV Positive	BV Negative	OR (95% CI)	p-value
	n (%)	n (%)		
Menopause	10 (10.3%)	1 (6.3%)	1,7 (0,2-14,4)	1.00
Vaginal douching habits	57 (58.8%)	11 (68.8%)	0,6 (0,2-2,0)	0.58
Obesity	41 (42.3%)	6 (37.5%)	1,2 (0,4- 3,6)	0.79
IUD	22 (22.7%)	4 (25%)	0,8 (0,2-3,0)	0.76
Etnicity				
Java	68 (70.1%)	9 (56.3%)	2,1 (0,7-6,2)	0.23
Madura	25 (25.8%)	7 (43.8%)	ref	
Smoke	11 (11.3%)	2 (12.5%)	0,8 (0,1-4,4)	1.00

Fisher's exact test

This study also analyzes the correlation between variety risk factors with actual BV diagnosed by Nugent score, as shown in Table 2. Risk factor analysed consists of menopause, vaginal douching habits, obesity, IUD, etnicity, and smoke habits. We did not find any significant association between all risk factors and the occurrence of BV.

with previous studies finding that sexual intercourse increases the risk of BV (Karim, 2016) (Bilardi et al., 2016). The other symptoms that arise beside vaginal discharge were vaginal odor 54.8%, and vaginal itching 59,2%. The vaginal odor occurred due to increased amin especially trimethylamine

produced by microorganisms such as *G. vaginalis*, *M. hominis*, and *Mobiluncus spp.*, which is overgrowth in BV. Semen which is alkaline (pH 7.2) lead to the release of amin from its attachment with the protein amine and producing a typical odor (Karim, 2016) (Bradshaw et al., 2013).

The use of vaginal douching is a risk factor for BV occurrence in some women. This study found that 60% BV patients frequently used vaginal douching. Washing the vagina (douching) associated with complaints of dysuria, vaginal discharge, and itching of the vagina. Vaginal douching, reported to cause changes in vaginal pH and reduces the concentration of normal microbiota, facilitating the growth of opportunistic pathogenic bacteria. The cessation of this habit may reduce the risk of BV (Brotman et al., 2008).

Most patients with BV in this study were classified overweight and obesity. Ventolini et al showed that obesity increases the risk of BV by 4 fold. Obesity is a mild inflammatory condition, which affect the mechanisms of immunity in the vagina. Obesity is an independent risk factor of BV (Ventolini et al., 2017).

IUD is a contraceptive method that widely used in patients with BV. Previous study showed that IUD users had 1.84 times increased risk of BV. The IUD can alter the normal vaginal flora, and promote the growth of pathogenic bacteria (Joesof et al., 2001) (Oduyebo, Anorlu and Ogunsola, 2009). Analysis on our study showed contrary result, that IUD was not significantly increases the risk of BV.

Most symptoms that emerged in this study was excessive vaginal discharge, vaginal odor and itching. These are in line with previous study conducted by Abdul Karim and Jusuf Barakbah in Dermatology Outpatient Clinic Dr. Soetomo Hospital, where 33.3% of patients experiencing vaginal odor and 28.6% complained vaginal itching. Association between accompanying complain and BV in this study were not significant ($p > 0.05$).

In term of response to BV therapy, 78.4% showed good result and improved condition, as seen by negative BV examination. Treatment evaluation was performed using vaginal swab then assessed by Nugent score. Metronidazole and Clindamycin are used as the first line therapy in this study, as recommended by CDC in 2014 (Oduyebo, Anorlu and Ogunsola, 2009) (Hoffman et al., 2016). Metronidazole inhibit anaerobes that support *Gardnerella vaginalis* but do not affect *Lactobacilli spp.*, thereby reducing the risk of late-stage relapse. Clindamycin is effective alternative drug. All these antibiotics have been shown to achieve cure rates of

70% to 80% after treatment (Oduyebo, Anorlu and Ogunsola, 2009). The recurrence rate of BV after successful therapy show variety result, starting from < 3 month until > 1 years, and fortunately 36.4% of patients never experienced relapse This study did not found any significant association between all risk factors and BV.

5 CONCLUSIONS

In this study, it was concluded that the characteristics of the patients who come to the Gynecology Outpatient Clinic Dr Soetomo Hospital complaining excessive vaginal discharge are on productive age. Most patients diagnosed using vaginal swab and Nugent score. The treatment of BV using standard regimen such as Metronidazole and Clindamycin still proven to be effective, and able to prevent some relapse. Unfortunately in this study we could not found any significant association between all risk factors and BV.

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