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Bacterial Vaginosis among Symptomatic Women of Reproductive Age Group in and around NIMS Hospital, Jaipur, India

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A B S T R A C T

Bacterial vaginosis (BV) is a polymicrobial, most common cause of abnormal vaginal discharge among young women of Reproductive age groups. This cross sectional study were to analyze the prevalence of vaginal infections in the patients attending Obstetrics and Gynaecology with various complaints like increased malodorous vaginal discharge among sexually active women aged 15-45yrs. We processed 100 High Vaginal Swabs (HVS) of Symptomatic women attending our OPD's between January and June 2017(06 months). Each HVS were subjected to Wet mount, Gram stain and Culture on BA, Mac Conkey Agar, SDA. Wet mounts were done to identify *Trichomonas vaginalis* and Gram stains were done to look for bacterial morphotypes. A total of 100 women participated in the study with the overall prevalence of BV rated 39% out of 39 samples 12 samples grew MS CoNS (30.76%), 08 samples grew MS CoPS (20.51%),07 grew *E. coli* (17.94%), 04 grew *Enterococcus* spp (10.25%) and 08 samples yielded anaerobic bacteria (20.51%). 21% were suffering from VVC. Out of these 21% of *Candida* spp- 10 Samples grew *Candida albicans* (47%) and 11 samples yielded Non–albicans *Candida* (52.4%). 05 samples also yielded *Trichomonas vaginalis* in the wet mounts. We got a wide spectrum of bacteria of 39% and fungi of 21%; 05% also showed Trichomonal infection. Overall 60% of the symptomatic women showed microbiological correlation.

Introduction

Bacterial vaginosis (BV) is a disease of the vagina caused by excessive growth of the bacteria (Donders *et al*., 2014; Clark *et al*., 2014). BV caused by an imbalance of the naturally occurring bacteria in the vagina (Bennett, 2015; Bacterial Vaginosis (BV), 2015). Here there is reduction in the amount of hydrogen peroxide producing Lactobacilli and overgrowth of anaerobic bacteria especially *Mycoplasma hominis*, *Bacteriodes* spp, *Mobiluncus* spp and *Gardnerella vaginalis* (Akomoneh *et al*., 2016). Bacterial vaginosis is an extremely prevalent condition and the number one cause of vaginitis among sexually active women (Yudin and Money, 2008).

Although it is not a reportable disease, available data show the prevalence of BV among non-pregnant women to range from

15-30% and 50% for pregnant women (Fleury *et al.,* 1981; Shayo *et al.,* 2012). However, the majority of cases of BV are asymptomatic and remain unreported and untreated (Amsel *et al.,* 1983).

BV presents with fishy vaginal discharge usually white or grey in color. Burning with micturation may occur (What are the symptoms of Bacterial Vaginosis, 2015). Risk factors for BV include sexual activity, new or multiple sexual partners and early age of sexual intercourse. Bacterial vaginosis is a risk factor for acquisition of herpes simplex virus type 2, gonorrhoea and chlamydial infections (Cherpes *et al.,* 2003). The incidence of BV has also been associated with a greater occurrence of other sexually transmitted infections like HIV and cytomegalovirus (Joesoef *et al.,* 1995) (Prevalence and correlates of Bacterial vaginosis among young women of Reproductive age in Mysore, India).

Previously considered a benign condition, BV has been implicated in many gynaecologic conditions and complications of pregnancy including Pelvic inflammatory disease, post hysterectomy vaginal cuff cellulites, endometriosis, amniotic-fluid infection, pre-term delivery, pre-term labour, pre-mature rupture of membranes and possibly spontaneous abortions (Eschenback *et al.,* 1988). BV resolves spontaneously in up to one third of non-pregnant and one –half of pregnant women (Klebanoff *et al.,* 2004). Treatment is indicated for relief of symptoms in women with symptomatic infection and to prevent post operative infection in those with symptomatic infection prior to abortion or hysterectomy or any post vaginal surgical procedure. Treatment of BV may also reduce the risk of acquiring sexually transmitted diseases (STD's), including HIV (Schwebke *et al.,* 2004). BV is of special public health concern in India because of the high burden of reproductive and pregnancy –related morbidity. Research in India is sparse and mainly limited to a few states (Prevalence and correlates of Bacterial vaginosis among young women of Reproductive age in Mysore, India). To date, there are only few studies on the prevalence of BV in the India.

Vulvovaginitis is a common day today problem in gynaecologic practice. *Candida albicans* is the commonest infectious cause producing symptoms and signs of vulvovaginal pruritis, burning irritation, soreness, burning of micturation, dysparunia and whitish cheesy discharge (Cheesbrough, 2006). However, a shift towards Non-albicans *Candida* spp has been recently observed. These Non-albicans *Candida* spp demonstrate reduced susceptibility to commonly used antifungal drugs.

So the current cross sectional study was carried out to know the microbiological profile of symptomatic women attending the Gynaecological OPD's in NIMS Hospital, Shobha nagar, Jaipur so as to provide proper treatment in order prevent future complications occurring because of them.

Materials and Methods

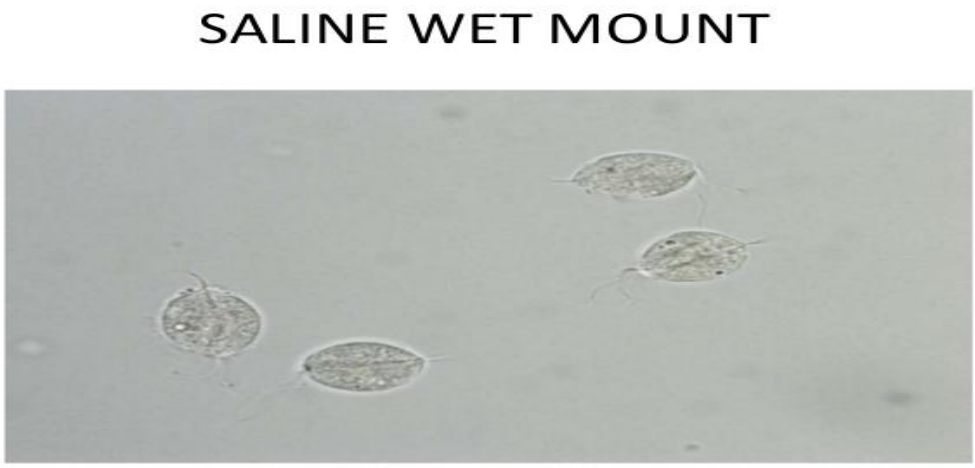
NIMS Medical College and Research Centre is a 950 bedded hospital located in Jaipur with an average of 50-60 patients in Gynaecology OPD each day. In this cross sectional study we selected 100 women attending Gynaecology OPD with symptoms of BV. All the samples were collected with strict aseptic precautions using sterile swabs. And the swabs were sent to the Department of Microbiology immediately after collection.

After the required entries, the swabs were first subjected to wet mount preparation, gram stain and cultures were being put-up on BA, Mac Conkey Agar and SDA. Wet mount preparation was done to identify *Tricomonas vaginalis* (motile). Gram stains were done to

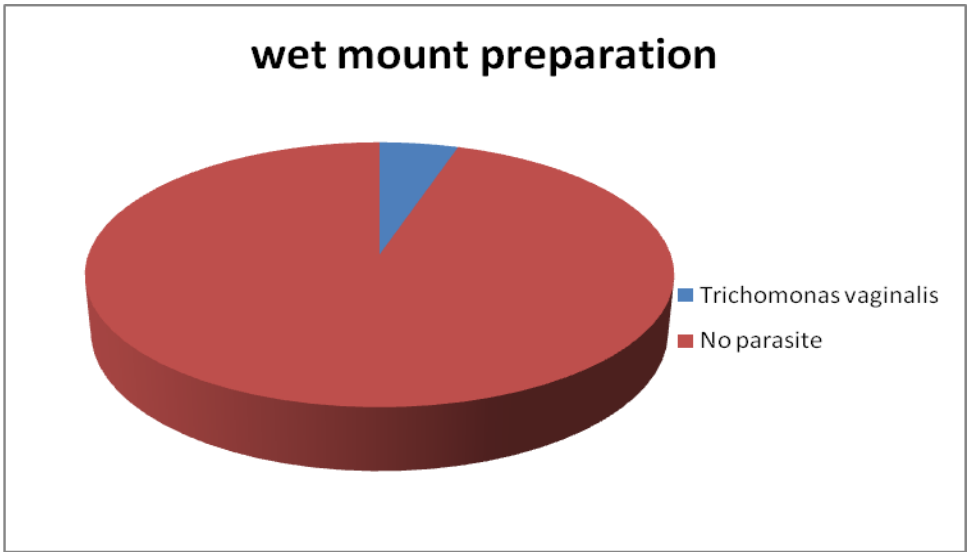
identify Gram variable bacteria with different morphotypes and CLUE cells. Nugent's scoring system was applied to grade the smears. Cultures were inspected on the subsequent day for the growth and necessary biochemical reactions were done to identify them. Antibiotic susceptibility testing was carried out using Kirby Bauer method. Growths on SDA were subjected to Lacto phenol cotton blue preparation to identify the fungal morphotypes. Growths showing *Candida* spp were further subjected to Germ tube tests and sub cultured on CHROM Agar to identify the species, Corn meal agar to look for Chlamydospores. Fermentation and Assimilation tests were carried out where ever required. Anti-fungal susceptibility was carried out in case of *Candida* spp only.

Observation

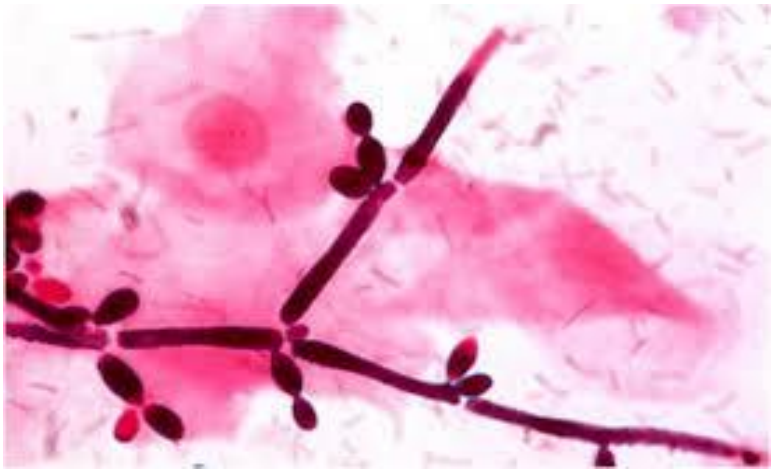
Total of 100 Samples were processed. Each sample was subjected to Wet mount preparation to look for *Trichomonas vaginalis*.



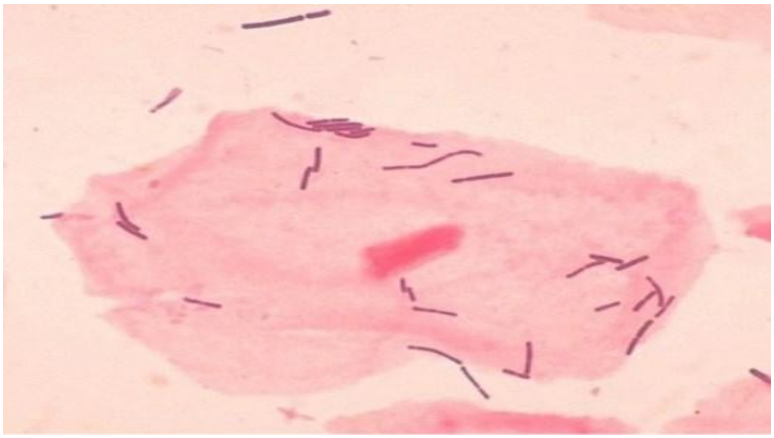
Wet mount preparation



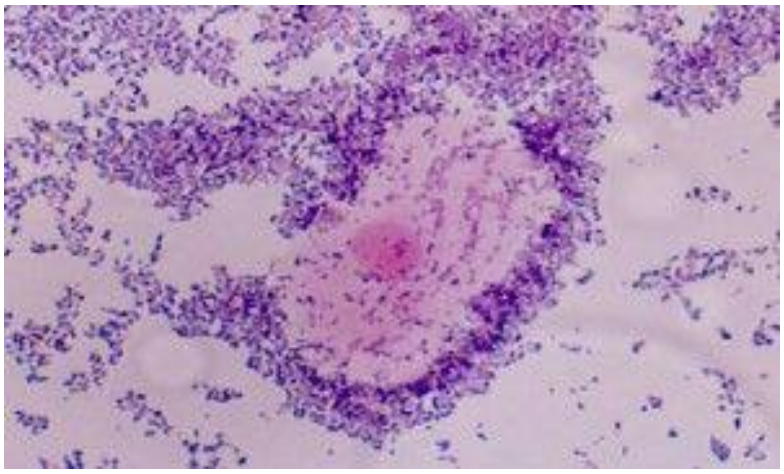
Gram stain showing *Candida* species



Gram stain showing *Lactobacilli*



CLUE cells



Mac Conkey showing *E. coli*

BA showing *Staphylococcus aureus*

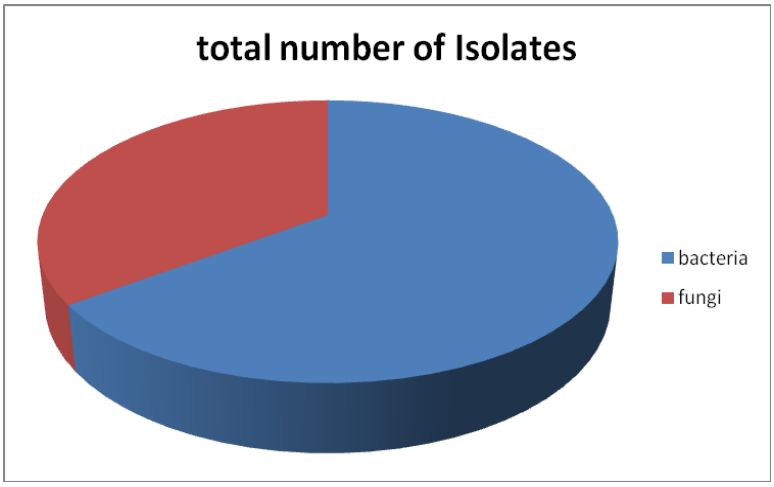
Antibiotic susceptibility testing done by Kirby Bauer method

BA showing *Candida* spp

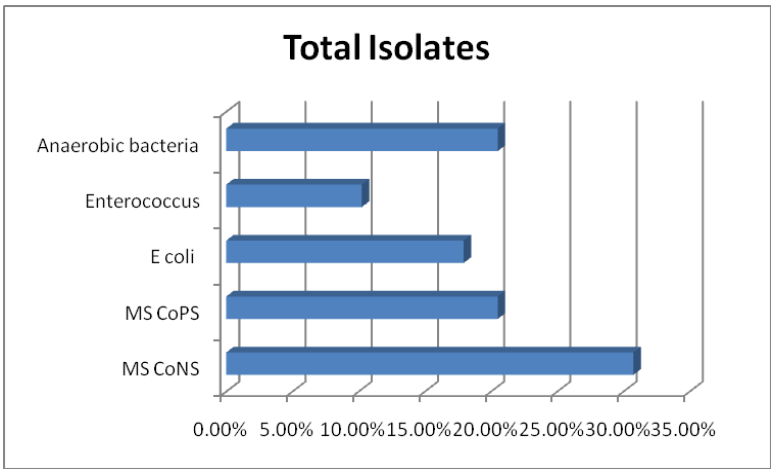
SDA slant showing subculture of *Candida* spp

Chrom agar showing *Candida albicans*

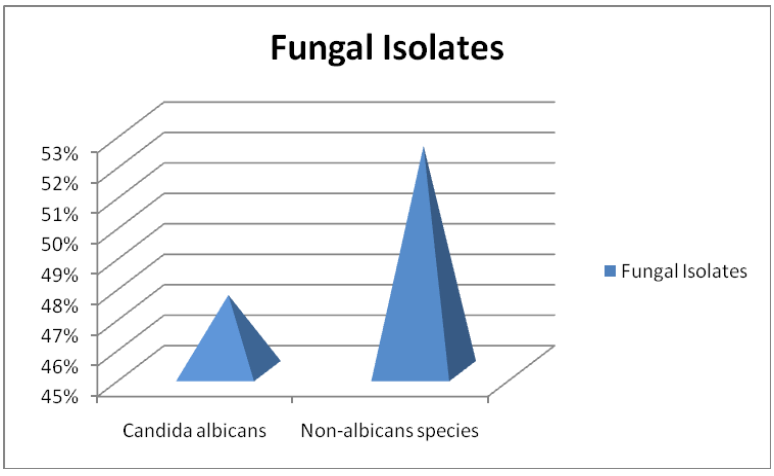
Total isolated organisms



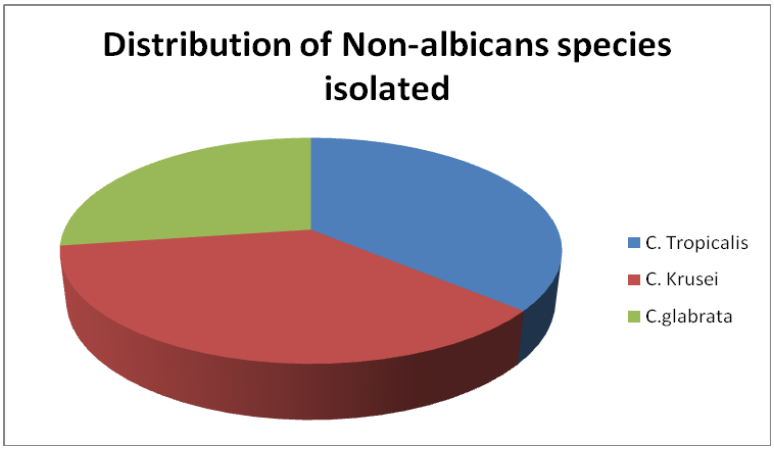
Total number of bacterial isolates



Distribution of fungal isolates



Distribution of Non-albicans species isolated



Results and Discussion

The current study was done to the Prevalence of BV in the patients attending Obgy OPD at NIMS Hospital, Jaipur between January and June 2017. A total of 100 Symptomatic women were included in this cross sectional study. Out of 100 women, the overall prevalence of BV was 39% out of 39 samples 12 samples grew MS CoNS (30.76%), 08 samples grew MS CoPS (20.51%),07 grew E coli(17.94%), 04 grew *Enterococcus* spp (10.25%) and 08 samples yielded anaerobic bacteria (20.51%).

As much as 21% were suffering from VVC. Out of these 21% of *Candida* spp- 10 Samples grew *Candida albicans* (47%) and 11 samples yielded Non–albicans *Candida* (52.4%). Among Non-*Candida* spp 04 cultures showed to be *Candida tropicalis* (36.36) and *Candida krusei* (36.36), 03(27.27) cultures were that of *Candida glabrata*. We also noticed 05 samples showing *Trichomonas vaginalis* in the wet mounts.

We got a wide spectrum of bacteria of 39% and fungi of 21%. Our study showed relatively high prevalence rate of BV. The reasons may be because of poverty, lack of literacy and lack of personal hygiene knowledge and rural patients attending the OPD. We compared our study with a study group conducted at Mysore and Cameroon. They correlated well with our BV prevalence rates. Similarly we compared our Candidal infection rates to a study conducted at Govt Medical College, Amritsar, which also suggested similar clinical culture positivity.

We also noticed that the Prevalence of Non-albicans *Candida* species is increasing. This shift from *Candida albicans* to Non-albicans *Candida* is alarming, as these Non-albicans *Candida* spp show reduced susceptibility to commonly used anti-fungal drugs.

Treatment is recommended only for women with symptoms. The other potential benefit of the treatment is reduction in acquiring *C. trachomatis*, *N. gonorrhoea*, *T. vaginalis*, HIV and Herpes Simplex type 2. Usually Metronidazole is sufficient for oral or intravaginal gel. Clindamycin can also be the alternate drug of choice. Oral Anti-fungals can be given for VVC along with topical antifungal pessaries, vaginal tablets or creams. Overall 60% of the symptomatic women showed microbiological correlation.

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