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PREVALENCE OF VAGINITIS IN FEMALES ATTENDING NATIONAL MEDICAL COLLEGE AND TEACHING HOSPITAL, BIRGUNJ, NEPAL

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Abstract

Vaginitis which include bacterial vaginosis, vulvovaginal candidiasis and trichomoniasis are the major gynaecological problems associated with the females of reproductive age group. In this study a sincere effort has been put to find out the prevalence of common types of vaginitis in females attending the Gynaecological outpatient Department of National medical college and teaching hospital, Birgunj from 1st January, 2016 to 30th June, 2016. A total of three hundred and thirty high vaginal swabs were collected from the females aged 15 to 49. Bacterial vaginosis was diagnosed by using the Amsel's criteria. Vulvovaginal candidiasis was detected by culturing in Sabouraud Dextrose agar, while Candida albicans was confirmed by germ tube test. Trichomoniasis was detected by observing motile trophozoites under microscope. Out of 330 patients, 155 (46.96%) were positive for vaginitis. Among the 155 positive cases, bacterial vaginosis and vulvovaginal candidiasis were found in 81 (54.3%) and 43 (28.8%) cases respectively, while mixed infection was found in 18.1% cases. Among the positive cases vaginitis was common in the age group 20-29 (56.12%) followed by the age group 30-39 (25.16%). Half of the females (51.7%) who had agriculture as their occupation had vaginitis. The infection rate was maximum (50.96%) among the females who are least educated, while the infection was least (20.60%) among the females having education above secondary level. As the infection vaginitis was high among the females of reproductive age group it is suggested to screen all reproductive aged females consistently for the infection vaginitis with right diagnosis and timely treatment.

Introduction

Vaginitis is the inflammation and infection of the vagina. It is symptomatically observed by a watery discharge with burning and itching of the vulva. The three common types of vaginitis are bacterial vaginosis (BV), vulvovaginal candidiasis and trichomoniasis. It is one of the most common reasons for gynecological consultation.[1] Vaginitis is characterized by the replacement of normal lactobacilli dominated flora with a mixed flora frequently containing *Gardenella vaginalis* and various anaerobic bacteria. One in three women wants consultation for vaginal discharge in Nepal. [2]

Discharge flows from the vagina daily as the body's way of maintaining a normal healthy environment. Normal discharge is usually clear or milky with no malodor. A change in the amount, colour, or smell; irritation; or itching or burning could be due to an imbalance of healthy bacteria in the vagina, leading to vaginitis. The most common causes of vaginitis in symptomatic women are bacterial vaginosis (40-45%), vaginal candidiasis (20-25%), and trichomoniasis (15-20%); yet 7-72% of women with vaginitis may remain undiagnosed. [3]

Alteration in normal balance of vaginal flora results in vaginitis. Many things like douching, feminine hygiene, sprays, certain soaps or bubble baths, antibiotics, diabetes, pregnancy or infections can disturb the balance of a

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healthy vagina.[4] Vaginitis in women of reproductive age group particularly during pregnancy resulting in sterility, abortion, and stillbirth. [5,6] Vaginitis leads to many complications such as miscarriage, premature rupture of membrane and postpartum endometritis. Since the disease leads to many obstetrical complications it is of utmost importance to know the causative organisms, prevalence of the disease and the risk factors affecting the prevalence among Nepalese women. In this study an effort has been made to study the prevalence of common types of vaginitis in females attending the Gynaecological outpatient Department of National medical college and teaching hospital (NMCTH), Birgunj.

Materials and methods

This study was conducted in patients of reproductive age group females attending the Gynaecological department of National Medical College and Teaching Hospital of Birgunj, Nepal from January 2016 to June 2016. A total of three hundred and thirty high vaginal swabs were collected from the females aged 15 to 49 suspected of vaginitis. Questionnaires were used to know about their general health history, educational level and possible risk factors for vaginitis.

The posterior fornix was swabbed with two sterile swabs from each female by the health professionals. The swabs were inoculated in a normal saline and were brought to the microbiology laboratory at sterile conditions. The first swab was subjected to pH measurement, wet mount, Whiff test and gram's stain while the second one was inoculated on Sabouraud Dextrose Agar (SDA). Litmus paper was used for assessing the pH of the discharge. It was observed by the colour change of the litmus paper. The wet mount was carried out to view the presence of motile oval flagellated protozoa, clue cells and white blood cells. Whiff test was performed by adding a few drops of potassium hydroxide (KOH) solution to the discharge. Immediately after the addition of KOH, emission of strong fishy odour was noted. Gram's stained smear was observed for the better anatomical view of clue cells. In females bacterial vaginosis was determined based on Amsel's criteria.[7] According to the criteria women were bacterial vaginosis positive if a minimum of three criteria out of four mentioned below were found to be positive.

1) An elevated vaginal pH> 4.5
2) A grey homogenous vaginal discharge
3) Whiff test is positive to a sample of vaginal secretion
4) A wet mount of vaginal secretion shows the presence of clue cells.

Vulvo vaginal candidiasis (VVC) was determined by culturing the swab in SDA. After obtaining the growth on SDA, germ tube test was performed by inoculating 0.5 ml of serum with a loopful of the culture growth and incubating at 37º C for 3 hours. The growth of *Candida albicans* was confirmed by observing the tube like appendages, indicating positive for germ tube test.

The results obtained were analyzed statistically by calculating chi square value and using Microsoft excel.

Results

Among the total of three hundred thirty females of reproductive age group attending the Obstetrics and Gynaecology department of NMCTH, one hundred and fifty five cases (46.96%) showed vaginitis. Out of 155 positive cases of vaginitis, 81(54.3%) had bacterial vaginosis, 43 (28.8%) had vaginal candidiasis, 2.6% had trichomoniasis and 18.1% had altogether mixed infection of vaginitis (table 1).

Table 1 Types of vaginitis among females of reproductive age group

Types of vaginitis	Frequency (%)
Bacterial Vaginosis	81 (54.3)
Vaginal Candidiasis	43 (28.8)
Trichomoniasis	4 (2.6)
Bacterial Vaginosis + Vaginal Candidiasis	24 (16.1)
Trichomoniasis + Bacterial Vaginosis + Vaginal Candidiasis	3 (2.0)
Total	155 (100)

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Out of the 155 positive cases of vaginitis infection rate was found to be maximum among the 20-29 age group and least infected group was 40-49 (table 2). Bacterial vaginosis was found to be highest in the females of the age group 20-29, whereas vaginal candidiasis was observed maximum in the age group of 30-39. The mixed infection of bacterial vaginosis and vaginal candidiasis was found to be highest in the age group 20-29. No any polymicrobial infection (i.e. trichomoniasis, bacterial vaginosis and vaginal candidiasis) was found in the age group of 20-29. The age of the patients in the reproductive age group does not reveal any significant relationship with vaginosis ($p > 0.05$) (table 2).

Table 2 Distribution of vaginitis among different ages of females

Age category	Total	Infection					Positive	Chi square test
		BV	VC	TS	BV+VC	TS+BV+VC		
< 20	48	8	11	0	7	0	26	P value > 0.05
20-29	212	63	13	0	11	0	87	
30-39	62	12	15	1	10	1	39	
40-49	8	3	0	0	0	0	3	
Total	330	86	39	1	28	1	155	

Out of the total females, the percentage of vaginitis was higher (51.7%) among the females having agriculture followed by the females having occupation other than agriculture and housewifes respectively (table 3).

Table 3. Vaginitis among females having different occupation

Occupation	Total (N)	Positive (n)		Percentage (%)
Housewife	224	85		37.9
Agriculture		85	44	51.7
Other than agriculture		21	10	47.6

The relationship of vaginitis infection with education as depicted in figure 1 shows significantly higher level of vaginitis positive among the less educated females (figure 1).

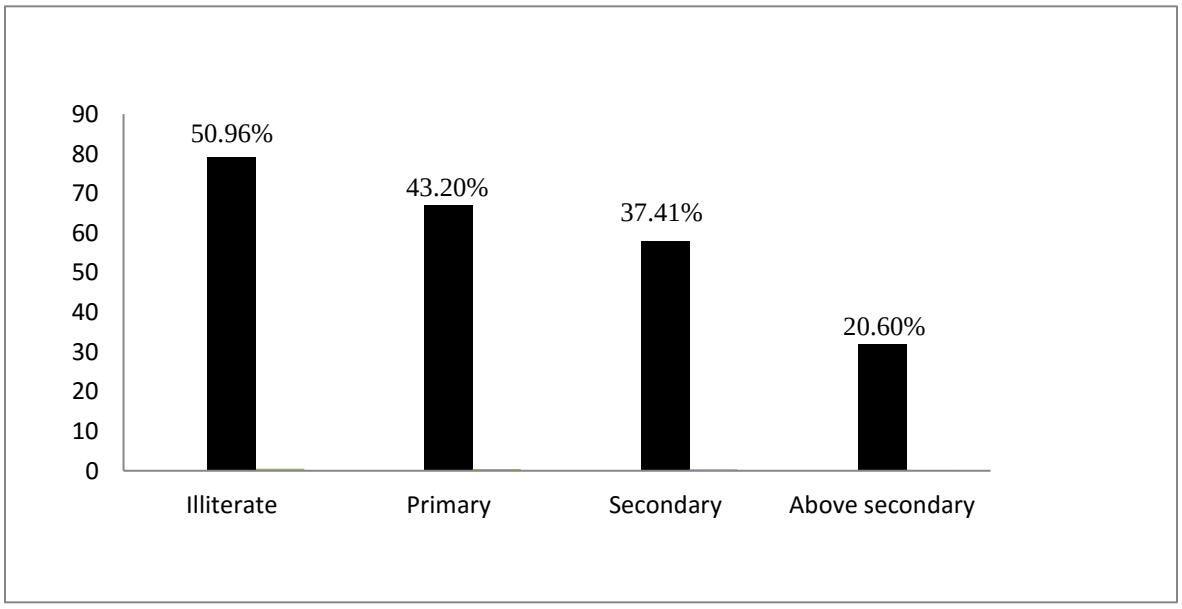

Fig 1. Educational status of females having vaginitis

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The total number of females found positive for vaginitis Hindus (70%) were the highest in number followed by Muslims (24%) and the Buddhists (6%).

People from the rural areas (i.e. from outside Birgunj) were higher in number with 58% than from Birgunj with 42%.

Discussion

In the present world vaginal infections with bacterial vaginosis, candidiasis and trichomoniasis are a global health problem for women. The present study was carried out on reproductive age group females and the prevalence was 46.96%. The prevalence was similar to the prevalence in the Kathmandu city done by Lamichhane *et al.*, in 2014.[8] In our study the overall prevalence rate of vaginitis is slightly higher than that reported in Vietnam, Iran and in the Spanish city of Curenavaca. [9,10] This may be due to the lower socioeconomic status and insufficient awareness among the people in the outskirts as compared to the capital of the country.

In the present study among all the 155 positive cases of vaginitis the bacterial vaginosis is the highest (54.3%) followed by candidiasis (28.8%) and trichomoniasis (2.6%), whereas polymicrobial infection existed in 18.1% of the cases. Similar trend of infection was reported by Sarita *et al.*, in 2014 in Nepal, where bacterial vaginosis is the most common followed by vaginal candidiasis and trichomoniasis recpectively.

In our recent study vaginitis was maximum in the 20-29 age group (56.1%) and the minimum was 40-49 age group (1.9%). The elevated rate of infection in the 20-29 age group might be attributed to their reproductively active age and high sexual exposure. Bacterial vaginitis was called non specific vaginitis,[11] but in our study it is the most prevalent cause of vaginitis among the females seeking medical service from the obstetrics and gynaecology department. It is in consensus with the study of owen in 2004.[1] In the recent past it was established that bacterial vaginosis is not an infection but a condition resulting from an imbalance in the vaginal flora.[1]

In our present study, following bacterial vaginosis; vaginal candidiasis was found to take the toll for the condition vaginitis. During our study it was found that the candidiasis related vaginitis was maximum in the pregnant females. According to Zhao *et al.*, in pregnancy, the vagina shows better susceptibility to infection by *Candida* spp, ensuing in both a higher prevalence of vaginal colonization and a higher rate of symptomatic vaginitis.[12] It was already established that the glycogen content in the vaginal tissue is high during pregnancy which provide an excellent carbon source for *Candida spp.* Several researchers demonstrated in vitro binding of female sex hormones to *Candida* spp as well as the capacity of certain hormones to enhance yeast mycelia formation and hence virulence.[13] In this study the prevalence of candidiasis was nearly in agreement to the study conducted by Sihavong *et al.*, in Vientiane.[13]

This study also reflects the association of the infection vaginitis concerning to the occupation. It has been seen that the females who have agriculture as their occupation carries the maximum percentage of vaginitis infection, which is similar to the study conducted by sarita *et al.*, .[14] The result clearly indicates that the farmers from the rural region are at higher risk of vaginitis. It may be attributed to their poor sanitation practices, poor living standard, ignorance towards their personal health and difficulty in accessibility towards the immediate healthcare facilties.

In this study it is observable from figure 1. that the prevalence of vaginitis was higher among the illiterate females which account for 50.96% of the cases and least among the females who have education above the secondary level, which was statistically significant ($p < 0.05$). Higher prevalence of vaginitis among the less educated female might be due to lack of education, low financial status, lack of female consultants at the health centre and the social cultural structure.

Conclusion and Recommendations

The study shows that vaginitis is common among the females of reproductive age group. Amongst all the vaginitis cases bacterial vaginitis was found to be maximum in the 20-29 age group. The percentage of vaginitis was seen among the females who have agriculture as their occupation. The prevalence of vaginitis was high in less educated

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and low socioeconomic status females. If the cases of vaginitis remain undetected for a long period of time, it may lead to abnormalities in childbirth and maternal health. In this prevalence study education and occupation presents a significant risk to contribute to vaginitis. Through this prevalence study it can be said that females need correct health education regarding their gynaecologic and reproductive health. As the prevalence of bacterial vaginosis was high in this study, it is suggested to screen all reproductive aged females consistently for bacterial vaginosis with right diagnosis and timely treatment. In conclusion we recommend that emphasis should be given to reproductive health care and educations on a larger scale, which could dramatically improve the health of females and reduce the risk of acquisition of vaginitis.

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