

## ORIGINAL ARTICLE

## Presentation, Diagnosis and Treatment of Mixed Vaginitis

SAFIA PERVEEN<sup>1</sup>, FATIMA SHAH<sup>2</sup>, SALMA ZAMAN<sup>3</sup>, FIZZA MAHMOOD<sup>4</sup>, MUHAMMAD SULEMAN AZHAR<sup>5</sup>, USAMA MAHMOOD<sup>6</sup><sup>1</sup>Associate Professors, Department of Obstetrics & Gynaecology, Sahiwal Teaching Hospital and Medical College, Sahiwal<sup>2</sup>Medical Officer, Ali Shirazi Poly Clinic Hospital, Sahiwal<sup>3</sup>Assistant Professor, Department of Obstetrics & Gynaecology, Services Institute of Medical Sciences, Lahore<sup>4</sup>House Officer, Sahiwal Teaching Hospital and Medical College, Sahiwal<sup>5</sup>4<sup>th</sup> Year MBBS Student, Lahore Medical & Dental College, Lahore<sup>6</sup>Medical Officer, DHQ, BahawalnagarCorrespondence to Dr. Safia Perveen, E-mail: [drsaafia@hotmail.com](mailto:drsaafia@hotmail.com) Cell: 0300-6723575

## ABSTRACT

**Background:** Mixed vaginitis is commonly observed in many women at their fertility age which brings negative impact on women well-being.**Aim:** To analyze the presentation, diagnosis and treatment scheme of mixed vaginitis.**Study Design:** Cross sectional analytical**Place and duration of study:** Department of Obstetrics & Gynaecology, DHQ/Teaching Hospital Sahiwal from 1<sup>st</sup> January 2021 to 30<sup>th</sup> June 2021.**Methodology:** Eighty females suffering from more than one type of vaginitis were enrolled as study participant after their complete diagnosis. High vaginal swabs, culturing requiring gram staining and lab testing through PCR was performed.**Results:** The mean age of 26.3±3.5 years. There were 11.25% cases with aerobic vaginitis, 43.75 % of bacterial vaginitis, 25% of vulvovaginal candidiasis, 11.25% allergic vaginitis and 8.75% of trichomoniasis in a mixed presentation. 75% of cases were treated with tropical anti bacterial or antifungal agents and 33% those cases treated with metronidazole in a combination with other drugs as well.**Conclusion:** Mixed vaginitis is treated on basis of its presentation with various diagnosis protocols.**Keywords:** Presentation, Treatment, Mixed vaginitis

## INTRODUCTION

Vaginitis is an inflammation of vagina which results in pain, itching and abnormal discharging.<sup>1</sup> Mixed vaginitis (MV) is a condition with presence of two different types of vaginitis that can lead to vaginal signs and symptoms.<sup>2,3</sup> In clinical practice, only few signs and symptoms vary in the recognition of vaginitis. Vulvovaginal candidiasis (VVC) is more frequently reported by women with thick curdy discharge and vulvar pruritis<sup>4</sup>, whereas thin white discharge is reported by females with bacterial vaginitis (BV)<sup>5,6</sup>. Few symptoms and signs can occur with any type of vaginitis including: vaginal soreness, dyspareunia and abnormal vaginal discharge. Clinical presentation of mixed vaginitis is mostly atypical which many times lead to incorrect diagnosis and treatment.

More than twenty genital tract infections have been identified which are caused by fungi, bacteria, viruses, mycoplasma and protozoa.<sup>8</sup> Majority of female reproductive tract infections occur in the cervix and vagina. Various microorganisms pave the path of cervical infection such as herpes simplex virus-2 (HSV-2), *Neisseria gonorrhoeae* (NG), *Mycoplasma* and *Chlamydia trachomatis* (CT)<sup>9,10</sup>. The major forms of vaginitis such as bacterial vaginosis (BV), cytolytic vaginosis (CV), vulvovaginal candidiasis (VVC), aerobic vaginitis (AV) and trichomonas vaginalis (TV). Mixed vaginitis is mainly poorly studied and ignored as it is atypical and its diagnosis is also very complicated in contrast to one-type of vaginitis.<sup>11</sup>

Aim of the present study is to identify the diagnosis and treatment of mixed vaginitis. This study will prove beneficial for the understanding of mixed vaginitis and also provide benefits to health care professionals for the exact diagnosis of this disease. This will also prevent patients from its related complications.

## MATERIALS AND METHODS

This cross-sectional analytical study was conducted after permission from IRB in the Department of Obstetrics & Gynaecology, DHQ/Teaching Hospital, Sahiwal from 1<sup>st</sup> January 2021 to 30<sup>th</sup> June 2021. Eighty females who visited the Obstetrics and Gynaecology department with complaints of vaginitis were included in this study. The study excluded patients having vaginal

cancers and age 19 to 47 years. A written permission was taken from each patient. Vaginitis was featured with symptoms related to vagina as discharge, foul odor, superficial as well as internal itching, irritation and or feeling of burning. The diagnosis was made post considering the clinical symptoms, physical examination, laboratory testing such as Amsel criteria was used for bacterial vaginosis identification with gram staining technique also used. High vaginal swab was taken from the posterior fornix part of vagina by using Cusco's bivalve-speculum for the purpose of exposure and for using sticks. The vulvo-vaginal candidiasis (VVC) was diagnosed post clinical examination through potassium hydroxide-microscopy. Cultural identification of VVC complicated was also a recommended protocol. Non-albican strains were diagnosed by culture for treatment of candida. BV was treated with metronidazole while VVC treatment used fluconazole or azole. The international CDCP highly recommends the use of amplification of nucleic acid for trichomoniasis diagnosis especially in women with high risk. The treatment involved metronidazole or tinidazole. Non-infectious vaginitis was treated after enlisting underlying causes. While atrophic-vaginitis was hormonally treated in the majority of cases while non-hormonal therapies were used in few. Clindamycin or steroid use was found effective in treating inflammatory vaginitis. All the data including sociodemographic, age, type of vaginitis was entered in a well-designed questionnaire and further analyzed by SPSS version 25.0. Chi square test and independent t test was performed for analyzing qualitative and quantitative variables. P value ≤0.05 was taken as significant.

## RESULTS

The mean age of the patients was 26.3±3.5 years. There was a mixed vaginitis picture in all the enrolled patients with more than one type of vaginitis presented in them. The endogenous infection was presented in aerobic or severe vaginitis with involvement of *Streptococcus* Spp, *S. aureus*, Group B streptococci, *E. coli* and *E. faecalis* on lab identification. There were 11.25% cases with aerobic vaginitis out of which the majority complained of inflammation, redness, yellow discharge. Bacterial vaginitis was present in 43.75% of the women. The main microscopic findings were *G. vaginalis*, *Prevotellasp*, *Megasphaera* type 1 as well as some other fastidious anaerobes. The vulvovaginal candidiasis

Received on 11-08-2021

Accepted on 18-01-2022

was presented with *Candida albicans* Non-*albicans* Candidiasis (Table 1).

The present study also found allergic vaginitis as main cause for 11.25%, of vaginosis presentation. The symptoms were all overlapping with the vulvovaginal candidiasis. The trichomoniasis was 8.75% with majority of the cases giving a presentation of diffused vaginal discharge and strawberry appearance of cervix (Table 2).

Table 1: Presentation of mixed vaginitis (Aerobic, bacterial and vulvovaginal candidiasis) in enrolled cases (n=80)

Type of vaginitis	n	%	Reasons
<b>Aerobic vaginitis</b>	9	11.25	Multiple sex partners IUD Poor hygiene
Inflammation, vaginal redness, itching, yellow discharge	7	77.77	
Burning, sticky, yellow discharge.	2	22.22	
<b>Bacterial Vaginitis</b>	35	<b>43.75</b>	Poor hygiene
Fishy odor, vaginal milk like discharge	25	62.5	
Asymptomatic	10	28.57	
<b>Vulvovaginal candidiasis</b>	20	25.0	Antibiotic therapy Immunosuppressi on Multiple sex partners IUD
Dysuria and vulvar-pruritus, pain, inflammation/redness. Thick and curdy discharge	20	100.0	

The present study also observed the frequency of mixed vaginitis various types in grades of socioeconomic status of enrolled patients. Around 37.5% of patients suffering from bacterial vaginitis were suffering from low socioeconomic status. Most of the mixed vaginitis were common in low socioeconomic groups while allergic vaginitis was present in 8.75% of the upper class (Table 3).

In the present study it was seen that 75% of cases were treated with tropical antibacterial or antifungal agents followed with 33% of those cases treated with metronidazole and 27% with cetirizine respectively. Doxycycline was only applied in 5% of infectious vaginitis cases. Some of the medicines were given in combination with other drugs for complete treatment. Allergic vaginitis treatment involved PH controlled lotion for cleansing the affected area (Fig. 1).

Table 2: Presentation of mixed vaginitis (Allergic and trichomoniasis) in enrolled cases (n=80)

Type of vaginitis	n	%	Reasons
<b>Allergic vaginitis</b>	9	11.25	Latex based condoms
Overlapping presentation with vulvovaginal candidiasis	9	11.25	
<b>Trichomoniasis</b>	7	<b>8.75</b>	Poor hygiene Sexual Transmission Public baths
Asymptomatic	1	14.2	
Diffused vaginal discharge, yellow/ green, inflammation, redness, burning and cervix appearing as strawberry	6	85.71	

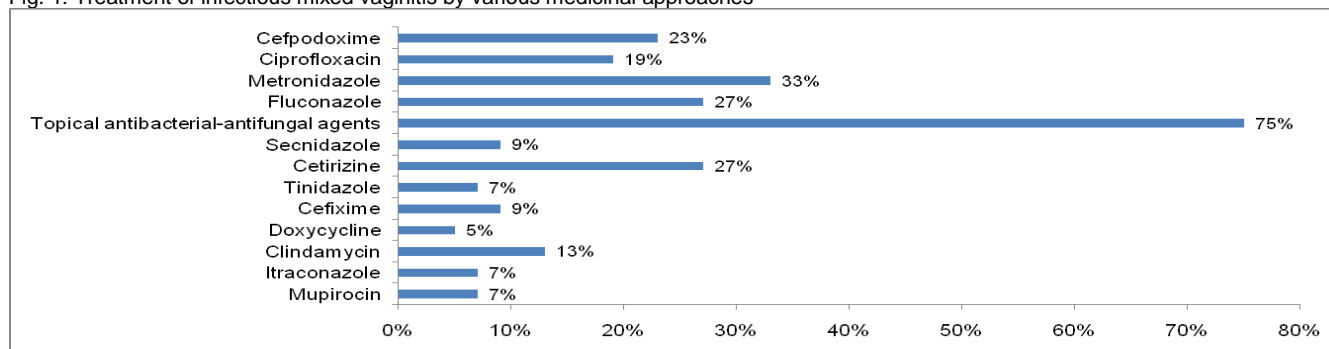
Table 3: Socioeconomic status of patients with mixed vaginitis

Socioeconomic status	Mixed vaginitis n=80 (%)				
	ARV	BV	VVC	AV	TC
Low	5(6.25)	30(37.5)	10(12.5)	-	6(7.5)
Middle	4(5)	2(2.5)	7 (8.75)	2(2.5)	-
High	-	3(3.75)	3(3.75)	7(8.75)	-

p value<0.05

Aerobic vaginitis (ARV), Bacterial Vaginitis (BV), Vulvovaginal candidiasis (VVC), Allergic Vaginitis (AV), Trichomoniasis (TC)

Fig. 1: Treatment of infectious mixed vaginitis by various medicinal approaches



## DISCUSSION

Incorrect diagnosis or failure to identify mixed vaginitis often lead to related complications and severity of the disease. Various laboratory testing techniques have now been developed for its clinical finding and exact causative agent of the disease. Overlapping signs and symptoms of mixed vaginitis is difficult to draw stable and final conclusions. Another main cause of misdiagnosis of MV is its concurrent infection with other cervical pathogens.<sup>12,13</sup> Few cervicitis is caused by mycoplasma and pathogen which might also cause coinfection with vaginitis that further enhance the complexity of disease and its diagnosis.<sup>14</sup> Therefore, diagnostic testing must be performed for cervical infection as well.

Mixed vaginitis is still a diagnostic challenge for the clinicians and medical practitioners. Polytherapy is considered an appropriate method for mixed vaginitis in consecutive signs and symptoms.<sup>15</sup> Nevertheless, polytherapy cannot be used mainly in asymptomatic colonized microbes. Treatment plan can be decided on the following basis: 1) according to type of microorganism and its pathogenesis, suitable antibacterial/antiviral/antifungal should be chosen to avoid drug abuse<sup>16</sup> 2) sexually transmitted infection

should be treated and diagnosed first<sup>17</sup> and 3) single vaginitis must be treated on first priority when contradiction in medication is present<sup>18</sup>.

At present, a wide variety of anti-infective treatments are present which are highly efficient against microorganism and pathogens<sup>19</sup>. Extensive research is required to elaborate its facts and to reduce its recurrence. Study on interspecies interactions further help in exact identification of microbial population

## CONCLUSION

Mixed vaginitis is treated on the basis of its presentation with various diagnosis protocols. Several medications and diagnostic tools are also present to identify the type of the pathogen and to treat the disease.

**Conflict of interest:** Nil

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