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JCIMCR OPEN ACCESS Journal of Clinical Images and Medical Case Reports

ISSN 2766-7820

Case Report

Open Access, Volume 4

Mixed infections in sexually transmitted genital discharge diseases: The clinician's dilemma and the microbiologist's rescue act

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Received: Sep 01, 2023
Accepted: Sep 20, 2023
Published: Sep 27, 2023
Archived: www.jcimcr.org

DOI: www.doi.org/10.52768/2766-7820/2615

Introduction

Sexually Transmitted Infections (STI) are a group of infectious diseases where the epidemiologically important mode of transmission can be through any kind of sexual activity or sexual intercourse [1]. STIs are a major public health concern. Even after progress has been made in prevention, diagnosis and treatment of STIs, many cases are still emerging.

Reproductive tract infections (RTI) are a group of infectious and non-infectious diseases that impact the reproductive tract physiologically as well as immunologically, and show some common symptoms such as vaginal itching and/or discharge. They tend to lead to an increased risk of pelvic inflammatory diseases, spontaneous abortions, preterm deliveries etc. Though RTIs affect both men and women, the number of women affected is more when compared to men.

Various community-based studies in India have shown the prevalence of STI to range from 39-84%. According to an Indian survey, bacterial vaginosis ranged from 33-47% [2], candidiasis 20-40%, and trichomoniasis 8-10 [2,3]. These three conditions account for 90% of vaginal discharge diseases, where as multiple infections can also coexist [3].

Objectives

The present study attempts to determine the occurrence of mixed infections in sexually active patients with genital discharge diseases (GDD), based on laboratory diagnosis and validates this with clinico-syndromic diagnosis.

Methodology

The total sample size for this study was 265 patients with genital discharges who attended male and female STD clinics and Gynecology OPDs, of a large tertiary care hospital in New Delhi. A written consent from all participants were taken after clearance for study was received from ethical department in VMMC and Safdarjung Hospital, New Delhi.

Genital discharge specimens were collected in sterile swabs from sexually active, consenting males and females. The speci-

mens were processed and investigated for various genital discharge diseases, both sexually transmitted infections and reproductive tract infections, including Gonorrhoea, Chlamydiasis, Trichomoniasis, Bacterial vaginosis and Vulvo vaginal candidiasis, using standard and accurate laboratory methods. The study was cleared by the Institutional ethics committee before commencement.

Inclusion criteria

1. All STI clinic attendees including adult males and females, who were sexually active and presented with genital discharge diseases and were willing to participate in the study were included.

2. All females, who were sexually active and presented with genital discharge diseases and were willing to participate in the study were included.

Exclusion criteria

1. Pregnant women.

2. Patients who were un-willing or refused to participate in the study.

3. Patients who were on antibiotics recently.

4. Mentally deranged patients who were unable to provide proper history.

Table 1: List of various laboratory tests performed for GDD.

S.no	Diseases	Tests Performed
1)	Gonorrhoea	Gram's stain, Culture and antimicrobial susceptibility testing (AST).
2)	Chlamydiasis	Direct Fluorescence Assay (DFA), ELISA for Ag/Ab, Polymerase Chain Reaction (PCR).
3)	Trichomoniasis	Wet mount and culture on Kupferberg media.
4)	Bacterial vaginosis (BV)	pH strip test, Amsel's and Nugent's criteria, Gram's stain,
5)	Vulvo vaginal candidiasis (VVC)	KOH, Gram's stain, Culture on SDA, Identification by Germ tube test , CMA agar, Chrom agar etc.

Results

Out of 265 patients we were able to diagnose mixed infections in 7 patients ie. 3%.

The details of results are given in table

Table 2: Mixed infections among patients with GDD.

S.NO	GDD	Females	Males	Total	%
1)	Gonorrhoea+ Chlamydiasis	0	1	1	0.3
2)	BV +VVC	6	0	6	2
3)	TOTAL	6	1	7	3

Discussion

Genital discharge disease (GDD) is one of the major health concerns not only in India, but world over. This study attempted to gather some information on the pros and cons of clinical and aetiological diagnosis of GDD. In a study conducted in Yemen in 2017 by Aziz M A et al. prevalence of VVC and BV as mixed infections was observed in 2.6% cases [4] which is similar to our study, with 2% prevalence rate. In another study by Forward KR co infection of gonorrhoea and Chlamydia was reported in 31 patients out of 41,567(0.07%) [5]. A study by Guy R et al. in 2015 reported, among a total of 13,480 patients, 2% of women and 4.1% of men coinfected with Chlamydiasis and gonorrhea [6], this study was very similar to our study with 2% of prevalence rate.

A 25.7% coinfection rate of bacterial vaginosis with vulvo vaginal candidiasis was reported by Brown H in the year 2020 [7], the prevalance rate of this co infection was seen as 2% in our study. Study in New Delhi by Ray K et al. reported 0.9% prevalence rate of co-infections of vulo vaginal candidiasis and bacterial vaginosis [8]. In a study by Elkins J M [9] 0.8% prevalance rate of coinfection with vulvo vaginal candidiasis and bacterial vaginosis was reported which was less than our study where we reported 2% of this coinfection. Another study by Rajlakshmi R in 2016 [10] reported 38% coinfection rate of this infection This rate was far more than the prevalence rate we reported for this coinfection.

None of these patients were clinically diagnosed for mixed infections, stressing the importance of the laboratory in diagnosing mixed infections in STIs (aetiological diagnosis). The non reporting of such mixed infections and their inadequate management, might lead to under treatment and thereby repeated infections or recurrence, with continuous spread of the infection among partners.

Conclusion

Management of sexually active men and women with complaints of genital discharges should include a thorough investigation using reliable laboratory methods, to avoid missing out cases of mixed infections. The syndrome-based management of STIs is easy to perform in resource-poor, developing countries, peripheral areas with a large patient burden and less well-established laboratory amenities [11].

The biggest drawback of syndromic management is mixed infections, which are often missed leading to underdiagnosis, undertreatment and eventually spread of infections. Most of the patients with STI in our study were from reproductive age group and all those were diagnosed with mixed infections were from this group and none of them were clinically diagnosed for mixed infections.

A Chinese study was performed to validate diagnostic algorithms for syndromic management of STIs with laboratory diagnostic support. The authors reported that the specificity and positive predictive value of syndromic management of genital discharges were not satisfactory [12]. Our study corroborates this view, as here too there was no correlation between clinical diagnosis and laboratory diagnosis.

Finally, it must be borne in mind that an accurate diagnosis is paramount to initiating appropriate treatment, and to achieve this end, laboratory support is vital.

Declarations

Acknowledgement: We are thankful towards all our technical staffs who rendered their help to us wherever and whenever it was needed.

Funding: No funding was taken from anywhere in this study.

Conflict of interest: No conflict of interest.

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