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Original Article

MICROSCOPIC AND DEMOGRAPHIC PROFILE OF SEXUALLY TRANSMITTED DISEASES AT A TERTIARY CARE CENTRE OF CENTRAL INDIA

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ABSTRACT

Objective: To find out the prevalence of sexually transmitted diseases (STDS) among the patients attending the tertiary care center through microscopic screening.

Methods: This Cross Sectional study was conducted from April 2018 to December 2019 wherein 500 samples were collected from patients attending the STD clinic of Skin and VD-OPD, and integrated counseling and testing center (ICTC), having cervical or urethral discharge along with signs and symptoms of sexually transmitted infections (STI) and were screened microscopically for the same.

Results: This study reported only 2 cases suggestive of *N. gonorrhoeae* on microscopy, wherein the Gram-stained smear showed the presence of a particular arrangement of Gram-negative coffee bean shape cocci, both intracellular and extracellular, and plenty of pus cells.

In Direct Microscopy findings, 49.2% of samples showed normal flora, 20.4% Gram-positive cocci, 15.8% Gram-negative cocci, 4% Clue cells, 13.8% with mixed flora, 3% Budding yeast-like cells and 0.4% showed Gram-negative cocci.

Conclusion: Such studies involving the laboratory and demographic data should be conducted regularly, which can help in estimating the disease burden, strengthening the diagnostic capacity, and formulating the requisite strategy for tackling this problem through a syndromic approach.

Keywords: Sexually transmitted diseases (STDs), *Neisseria gonorrheae*, Direct microscopy

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INTRODUCTION

The world health organization says that 340 million new cases of curable Sexually Transmitted Infections (STI) occur globally every year, of which 150 million are from South and Southeast Asia, including 50 million from India alone [1].

Sexually Transmitted Diseases also called Venereal diseases, have emerged as the third most dangerous illness. STDs exhibit a higher incidence and prevalence, an alarming rate of antimicrobial resistance, and a higher rate of serious complications with HIV co-infection in developing countries. Failure to diagnose and treat STIs at an early stage may result in serious complications and sequelae. The complication can be categorized into maternal, neonatal and disseminated infection, with a prevalence which is about 0.5-3% [2].

Since most of these infections occur in the economically productive age group the issue assumes utmost priority. STIs are passed from person to person primarily by sexual contact and are classified into varied groups. In India gonorrhea has a prevalence of 3.9% [3].

An estimated 17 million and 27 million new cases annually occurred in Africa and in Southern Asia, respectively [4]. The WHO estimated the Global Health Sector Strategy on STIs, 2016-2021. The Strategy's goal is to end the STI epidemic as a public health concern by 2030 [5].

It has been reported by previous studies that pre-existing ulcerative/inflammatory lesions of the genitalia due to STDs increase the transmission risk of HIV significantly. This has been established by research-based evidence that the treatment of these infections can reduce viral shedding, and transmission and thus decrease HIV seroconversion rates [1].

Most of the time it is not possible to have laboratory confirmation for the management of STIs, especially in rural health care settings, due to resource constraints, and hence the need for microscopy-based screening methods along with symptom-based diagnosis for timely management.

In light of the above facts, a cross-sectional study was planned to find out the prevalence of STDS through microscopic screening of the patients having cervical/urethral discharge along with the other clinical manifestations of STDs, attending the tertiary health care center.

MATERIALS AND METHODS

This Cross Sectional study was conducted in the Department of Microbiology, Mahatma Gandhi Memorial (M. G. M.) Medical College, Indore (M. P) during the period of April 2018 to December 2019. Patients attending the STD clinic of Skin and VD-OPD, MY hospital and ICTC center, Department of Microbiology, M. G. M. Medical College, Indore having cervical or urethral discharge along with signs and symptoms of STI were included in the study.

The study was done after the prior approval and as per the regulations of the Institutional Ethics Committee after taking written informed consent from the study participants. (Approval Letter No. EC/MGM/July-18/70).

A total of 500 non-repetitive samples were collected from the study participants. Females of the reproductive age group and all males with a history of lower abdominal pain, painful sensation while urinating, and vaginal discharge were included in the study.

While all those patients who have no signs and symptoms of STIs, who were on recent antibiotic treatment, and who fall outside the reproductive age group. were excluded from the study.

Participants were informed and explained the goal, purpose, implications of the study, and procedures involved. Written informed consent was obtained from study participants before their involvement in the study. Their demographic details and personal

and clinical history were noted. The personal information including the identity of the participants is kept confidential.

Two swabs (urethral in males and cervical in females) were collected one for Gram's staining and another for Culture. Gram's staining smear was examined for:

Epithelial cells, Pus cells, Clue cells, Organismsand their location, Gram-negative cocci, Gram-negative bacilli, Gram-positive cocci, Gram-negative Cocco-bacilli, Budding yeast cells and Normal flora (Gram-positive bacilli/Doderlein's bacilli).

A urethral swab was collected after at least one hour of voiding urine. Expressed urethral exudate, collected with a sterile swab. If there was no discharge, the meatus was compressed vertically to open the distal urethra and a thin, water-moistened swab (calcium alginate or Dacron) with flexible wire was inserted slowly (3-4 cm in males or 1-2 cm in females), rotated slowly and withdrawn gently.

Cervical swab sampling

A speculum was inserted into the vagina to view the cervix, which was wiped clean of vaginal secretion and mucus. A sterile swab was inserted 1 cm to 3 cm into the endocervical canal and rotated for 10 sec to 30 sec to allow absorption of exudates.

Sample processing

Specimens received were further processed as follows:

Day 1: The sample received was subjected to direct smear examination by Gram's staining and cultured on Gonococcal (GC) agar, and Blood agar (Day 1).

Day 2: Gram staining of the marked isolated colony, Identification by biochemical tests, Antimicrobial sensitivity testing by disk diffusion method, and Interpretation of the result was done.

Direct smear examination by Gram's staining

Smear making-smear made on bedside by spreading the swab in the center of the slide in an oval shape.

Fixation of smear-smears were fixed with methanol. Which was poured on smear and allowed to evaporate prior to gram staining. [6-8].

RESULTS

A total of 500 patients were included in this study. The median age was 30 y. The age ranges from a minimum of 15 y to a maximum of 45 y. Out of 500 patients, 483 were females and 17 were males (table 1).

Table 1: Age and genderwise distribution of study subjects

Gender	Age groups N (%)		Total
	15-24 y	25-45 y	
Male	4 (23.5)	13(76.5)	17
Female	138 (28.5)	345 (71.4)	483
Total	142	358	500

In this study, the educational status of 300 study subjects (60%) was below the 10th standard. 94 % (470) of the subjects were married. Demographic details of patients were collected. 133(26.6%) patients belong to rural area, 108(21.6%) from urban-slum area and 259(51.8%) were from urban areas (Tables 2,3,4). The majority of male patients were either daily wage laborers or students and most of the female patients were housewives.

Table 2: Educational status of study subjects

Educational status	Number	%
Below 10thstandard	300	60%
Above10th standard	200	40%
Total	500	100%

Table 3: Marital status of study subjects

Marital status	Number	%
Married	470	94%
Unmarried	30	6%
Total	500	100%

Table 4: Demographic distribution of study subjects

Demographic data	Number	%
Urban	259	51.8%
Urban slum	108	21.6%
Rural	133	26.6%
Total	500	100%

Out of 500 patients, 378 (75.6%) reported mucoid discharge, 59(11.8%) had serous, 31 (6.2%) had mucopurulent, 22(4.4%) had curdy discharge and 10(2%) had a purulent discharge (table 5, fig. 1).

Table 5: Direct microscopy findings

Direct microscopy finding	Normal flora	Gram negative bacilli	Gram-positive cocci	Gram negative coccobacilli	Budding yeast cells	Clue cells	Gram-negative cocci	GPC+GNB
500 (N)	246	79	102	17	15	20	2	19
%	49.2	15.8	20.4	3.4	3	4	0.4	3.8

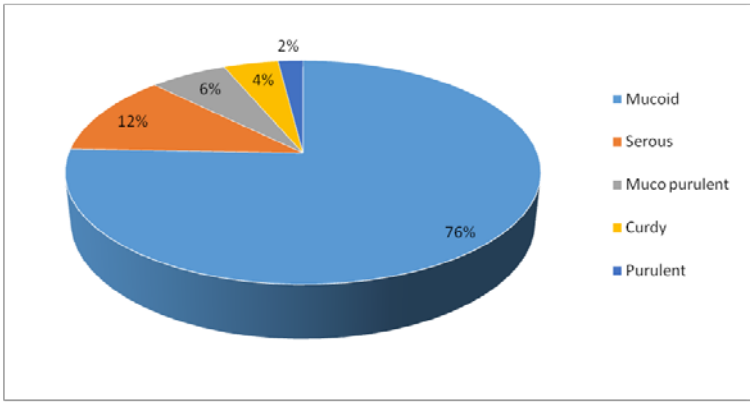

Fig. 1: Types of genital discharge reported in study subjects

This study reported only 2 cases suggestive of *N. gonorrhoeae* on microscopy, wherein the Gram-stained smear showed the presence of a particular arrangement of Gram-negative coffee bean shape cocci, both intracellular and extracellular, and plenty of pus cells.

In Direct Microscopy findings, 246 (49.2%) samples showed normal flora, 102(20.4%) Gram-positive cocci, 79 (15.8%) Gram-negative cocci, 20(4%) Clue cells, 19(3.8%) with mixed flora, 15 (3%) Budding yeast-like cells and 2(0.4%) showed Gram-negative cocci.

There was no growth of *N. gonorrhoeae* reported on a selective culture medium (GC Agar). There were various risk factors associated with sexually transmitted infections which were most common in the age group of 25-35 y. The factor found to be significantly associated with the prevalence of STIs were: illiteracy, low socio-economic status, multiple sexual partners, contact with Commercial sex workers, non-use of contraception, profession involving long stay away from home, and history of STI.

DISCUSSION

Sexually transmitted diseases (STDs) are considered the biggest threat to community health globally. There is a significant development in preventing, diagnosing, and treating STDs. According to the data put forth by WHO, there are more than one million people known to acquire a sexually transmitted disease every day. Every year around 500 million people contract any of the five STDs: Chlamydia, gonorrhea, syphilis, Balanoposthitis, and trichomoniasis. Over 530 million people suffer from infections herpes simplex virus type 2 (HSV2) and more than 290 million women acquire human papillomavirus (HPV) infection. In our country, approximately 6% of adults have one or the other Reproductive tract infection resulting in 30-35 million episodes of STD/RTI every year [9, 10].

Despite the huge burden of the disease, the problem remains unaddressed. The stigmatization at the individual and community levels results in the reluctance of the patient to approach the health care providers. This leads to difficulty in partner notification and treatment. Several epidemiological studies have been undertaken recently in different regions of the country to understand the pattern and changing trends of STDs showing an increased prevalence of bacterial STIs [11-13].

A study conducted by Bhatti GS reported that out of the 2,44,881 cases attending the Skin OPD, 3751 (1.531%) patients were having STIs. Amongst these, the highest number of cases were of Balanoposthitis (24.8%) in both sexes, followed by Genital ulcer disease (21%), Scabies (11.5%), Syphilis (9.7%), Warts (8.1%), Urethral Discharge (7.2%) and HIV (0.2%).

The majority of the male patients affected were daily wage laborers while most of the women patients were housewives. 23% of the total infected patients were students. These findings are in accordance with our study. So, sex education through a structured module in schools is the need of the hour. This can increase awareness regarding STIs and safe sex practices among school children, which can help lower the risk of STIs among students [14].

In most of the studies, Bacterial STIs were found to be reported much higher than viral STIs because of their recurrent nature. The global data shows a high prevalence and incidence of chlamydia, gonorrhea, trichomoniasis, and syphilis in the adult population.

These findings stress the very need for formulating a global strategy for the public accessibility of effective interventions for STI prevention, screening, diagnosis, and therapy.

The Global Health Sector Strategy on sexually transmitted infections (STIs), was endorsed by the World Health Assembly in 2016 to end STIs as a public health threat by 2030. WHO conducts global prevalence surveys to monitor progress towards achieving this goal [15].

Health programs should also focus on creating public awareness about STIs and removing the stigma from society through community outreach. So that the patients do not hesitate in approaching the health care providers in the early stage for timely appropriate treatment so that the complications and further transmission of the STIs can be avoided [14].

CONCLUSION

Currently, the data on the prevalence, etiopathogenesis, and demographic profile of sexually transmitted infections (STI) in India is not adequate and this study intends to fill this gap.

Such studies involving the laboratory and demographic data should be conducted regularly, which can help in estimating the disease burden, strengthening the diagnostic capacity, and formulating the requisite strategy for tackling this problem through a syndromic approach.

WHO also recommends conducting such prevalence surveys focussed on the etiological profile of STIs to modify and update the national guidelines.

The average age of the affected patients was 36 y, indicating that the younger age group is the most vulnerable. Nevertheless, characteristics of co-infection in each sex were not always consistent. When we consider that co-infection is frequently found in younger ages, we must take into account the long-term complications of young people and easy transmission to sexual partners. The prevention and control strategy should be framed keeping in view this vulnerable group.

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AUTHORS CONTRIBUTIONS

All the authors Dr. Abha Gupta, Dr. Amit Gupta, Dr. Ashish Saraswat, and Dr. Abhishek Mehta, have equally made a substantial contribution to the conception, data acquisition, analysis, and interpretation, in drafting the article and agreed to be held accountable for all aspects of the work.

CONFLICT OF INTERESTS

Declared none

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