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Evaluation of Etiological Agents in Patients with STI at Tertiary Care Hospital

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ABSTRACT
Sexually transmitted infections (STDs) are a group of infections and clinical signs and symptoms produced by pathogens that can be acquired and communicated through sexual intercourse. The present study aimed to evaluate etiological agents in patients with STIs at a tertiary care hospital. This prospective cross-sectional study was conducted in women aged between 18-45 years, presenting with complaints of vaginal discharge, urethral discharge, or lower abdominal pain (Pelvic Inflammatory Disease-PID), among other symptoms. Various investigations such as staining and microscopy, including gram stain, KOH mount, Tzanck smear and wet mount were performed as required based on the history of sexual exposure and clinical examination. The mean age of the females was 35.63 ± 11.4 years, with the majority from rural areas (60.91%), 8.33% of females reported having multiple sexual partners, and 38.79% reported regular unprotected intercourse. The most common clinical presentations were genital discharge (70.91%) and lower abdominal pain (28.79%), while less common presentations included genital ulcerative diseases (5.61%) and urethral discharge (5%). Etiological diagnosis was established in 221 cases (33.48%). Common etiological agents diagnosed included C. albicans and species (11.82%), Bacterial vaginosis (9.24%), T. vaginalis (5.61%), and N. gonorrhoeae (1.97%). Concomitant HIV seropositive (1.82%) and HBsAg positive (0.76%) status was also noted. Vaginal discharge due to C. albicans and species, Bacterial vaginosis and T. vaginalis was a common finding in the present study.

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Key Words
STIs, vaginal discharge, bacterial vaginosis, etiological diagnosis

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INTRODUCTION

Sexually transmitted infections (STD) are group of infections and clinical signs and symptoms produced by pathogens which could be acquired and communicated through sexual intercourse. Sexually transmitted infections (STI) present a huge disease burden and adversely impact the reproductive health. Their consequences are far more devastating and widespread among women as compared to men[1-2].

STIs differs from STD in that STD conventionally includes infections resulting in clinical diseases that may involve the genitalia and other parts of the body participating in sexual interaction e.g., syphilis, gonorrhea, chancroid, donovanosis, nongonococcal urethritis, herpes genitalis etc. STI, in addition, includes infections that may not cause clinical disease of genitals, but are transmitted by sexual interaction e.g., all STD and hepatitis B, human immunodeficiency virus (HIV), HTLV-1 etc.

The epidemiological profile of STIs differs from country to country and from one region to another within a country, depending upon demographic, socioeconomic, cultural, environmental and health factors[3]. Moreover, the incidence and distribution of these diseases is also influenced by lifestyle and susceptibility of the individual, pathogenicity of the microbes, prevailing therapy and disease control measures. Global control and prevention of STIs will contribute to progress towards achievement of the sustainable development goals to ensure universal access to sexual and reproductive healthcare services[4-5]. Present study was aimed to evaluate etiological agents in patients with STI at tertiary care hospital.

MATERIALS AND METHODS

Present prospective study was cross-sectional study, conducted in Department of Microbiology, at tertiary care centre in North Karnataka. Patient with history of STI were studied from Jan to December 2021. Study approval was obtained from institutional ethical committee.

Women aged between 18-45 years, presented with complaints of current vaginal discharge, genital ulcer, urethral discharge, lower abdominal pain (Pelvic inflammatory Disease-PID), etc. were considered in study, while women with other infections, such as urinary tract infections (UTIs), genital scabies, menstrual problems, or gynecological surgeries were excluded.

Patient details (age, gender, residence, educational status, number of partners, use of barrier contraceptive, onset and progression of symptoms, prior treatment, and history of similar complaints in partners were recorded in case record proforma. Physical examination (vaginal, speculum, and bimanual) was carried out, to assess the presence of any abnormal discharge, genital ulcers, cervicitis, cervical erosion, pelvic inflammatory diseases (PID) etc. Cervical, vaginal and urethral swabs and blood samples were collected for laboratory investigations. Swabs from ulcers (when present) were collected. All samples were transported immediately to microbiology department and wherever applicable processed on the same day.

Various investigations such as staining and microscopy such as gram-stain, KOH mount, tzanck smear and wet mount were done wherever required as per history of sexual exposure and clinical examination.

- Venereal disease research laboratory (vdrl) test for syphilis.
- Direct urethral/cervical smear and culture on chocolate agar and saponin-lysed blood agar with vancomycin, colistin, nystatin, trimethoprim (VCNT) supplement to detect Neisseria gonorrhoeae and confirmation of the isolates by standard methods
- Direct wet mount examination for the detection of T. vaginalis.,
- Direct Gram stained smear examination and culture on Sabouraud's dextrose agar, followed by culture confirmation by germ tube test for the detection of Candida albicans and other Candida species.,
- Nugent's scoring of vaginal Gram-stained smear for the diagnosis of BV.,

Data was collected and compiled using Microsoft Excel, analysed using SPSS 23.0 version. Statistical analysis was done using descriptive statistics.

RESULTS AND DISCUSSIONS

In present study, mean age of females was 35.63±11.4 years, majority from rural area (60.91 %), 8.33 % females gave history of multiple sexual partners and 38.79% gave history of regular unprotected intercourse.

Common clinical presentation was genital discharge (70.91 %), lower abdominal pain (28.79 %) while less common were genital ulcerative diseases (5.61 %), urethral discharge (5 %).

After all investigations, etiological diagnosis could be established in 221 cases (33.48 %). Common etiological agents diagnosed were C. albicans and species (11.82 %), Bacterial vaginosis (9.24 %), T. vaginalis (5.61 %), N. gonorrhoeae (1.97 %),. Concomitant HIV seropositive (1.82 %) and HBsAg positive (0.76 %) status was also noted.

Clinical signs and symptoms of the STIs include foul smelling discharge from the vagina, pustules on or around the sexual organs and pelvic pain. Women who do report to a healthcare facility for any RTI/STI symptom are usually managed by the syndromic approach of the World Health Organization (WHO).

The syndromic management of STIs is based on

Table 1- General characteristics

	No. of patients	Percentage
Mean age (years)	35.63 ± 11.4	
Residence		
Urban	258	39.09
Rural	402	60.91
Other		
Patients with multiple sexual partners	55	8.33
H/o regular unprotected intercourse	256	38.79

Table 2- Clinical presentation

Clinical presentation	No. of patients	Percentage
Genital discharge	468	70.91
Lower abdominal pain	190	28.79
Genital ulcerative diseases	37	5.61
Urethral discharge	33	5

Table 3- Etiological diagnosis

Etiological diagnosis	No. of patients	Percentage
C. albicans and species	78	11.82
Bacterial vaginosis	61	9.24
T. vaginalis	37	5.61
N. gonorrhoeae	13	1.97
HIV seropositive	12	1.82
HBsAg positive	5	0.76
Total	239	36.21

obtaining a presumptive diagnosis via the observation of a set of signs and symptoms ("syndrome") in the patient[6], without the need for laboratory confirmation of the underlying pathogen. This approach is cheap, it can be used in resource-poor and remote areas, and it allows immediate treatment during the first visit to the clinic or health centre without any laboratory trained staff or technically demanding procedures[7].

However, the inconspicuous clinical presentation of STIs affects the applicability of the syndromic approach. These infections are often asymptomatic and the same set of signs and symptoms may correspond to different underlying organisms, leading to subjective judgement[8]. Policy and practice are not the same in the intervention of STIs, this may be because lack of education., underreporting., syndromic management at the primary healthcare levels., different geographical conditions., socio-economic conditions., culture, tradition, mores and belief[9].

Patil PC[10] noted that females formed the majority of the affected population with marital status, illiteracy, migrant status of the population being the independent demographic factors. The important findings were that the high-risk behaviors were more common in married population and the inconsistent condom use in marital encounters were found to be the cause of increasing prevalence in the study population.

Krishna Ray[11] studied 4090 women attending peripheral government healthcare centers, both rural and urban. Overall, self-reporting of morbidity was 65.0%. However, the percentage of women with some STD-related syndrome was 71.4%. The rural women were observed to have significantly more STD syndromes than their urban counterparts. The etiological diagnosis could be established in only 32.2% of cases.

Gunjan[12] studied 525 patients, STIs were more common in men, with male (365): female (160) ratio of 2.2:1. Maximum numbers of patients were in the age group of 25-34 years. Unskilled workers (22.28%) and housewives (20.00%) constituted major proportion. Majority of the cases presented with warts (38.09%) followed by herpes genitalis (19.61%). But herpes genitalis (27.39%) was found to be the most common STD seen among males and warts (68.75%) among the females. HIV seropositivity was seen among 20 (3.80%) patients and was most commonly associated with herpes genitalis infection (60 %).

Bhatti[13] studied 3751 with STIs. Balanoposthitis accounted for the maximum number of the STIs with 929 cases (24.8%) were quite common in both sex followed by GUD Herpetic 485 (12.9%), Scabies 433 (11.5%), syphilis 365 (9.7%), GUD non Herpetic 304 (8.1%), Warts 303(8.1%), Urethral Discharge 270 (7.2%) and HIV+9 (0.2%).

Singh[14] noted that commonest STD was herpes genitalis 24.04% and condylomata acuminata 23.51% respectively. The prevalence of combined gonococcal/non gonococcal urethritis and bacterial vaginosis accounts for 23.84% and HIV was detected in 13.19% of the patients. There is a decline in occurrence of Syphilis with prevalence of 5.74%. There is increased prevalence of viral STIs and decline in bacterial STIs seen, probably due to easy access of antibiotics to common people.

Sushil Rathi[15] studied 4471 cases, 2807 (62.8%) were males and 1664 (37.2%) were females. The most commonly observed STI was balanoposthitis, followed by cervico-vaginal discharge, Genital Ulcerative Disease- Herpetic (GUD-H), anogenital warts, GUD-nonherpetic, urethral discharge, lower abdominal pain and inguinal bubo. The proportion of viral STIs was 33.5% (1495 cases) and bacterial STIs were 4.3% (191 cases). The most commonly observed STI was cervico-vaginal discharge in females. Newly diagnosed cases of HIV were 1.4% (61 cases) of total cases.

With the rapid economic development, socio cultural changes, and globalization, adolescents and youths are becoming more and more sexually active leading to sexuality associated problems such as unplanned adolescent pregnancy, out of wedlock childbearing, sexually transmitted disease[16]. Due to the limitations of a syndromic approach, the laboratory diagnosis of STIs is essential to ensure timely and appropriate patient treatment[17].

Point-of-care tests (POCTs) in accordance with the ASSURED criteria (affordable, sensitive, specific, user-friendly, robust/rapid, equipment free and delivered to end users) are essential to address these challenges[18]. There remains an urgent need for the development of an affordable, rapid and effective diagnostic technique to improve the detection of

RTIs/STIs in women in resource poor settings. This may prevent sequelae and reduce transmission of these infections[19].

For prevention of STIs, it is important to emphasise on counseling and education, condom promotion, compliance with treatment and contact tracing of sexual partners and their treatment. Primary prevention can be achieved by providing formal sex education and secondary prevention by means of rapid diagnosis and management of STIs.

CONCLUSION

Vaginal discharge due to C. albicans and species, Bacterial vaginosis and T. vaginalis was common finding in present study. The treatment may be initiated on the basis of signs and symptoms, however, it is essential that the treatment is modified as and when laboratory test results become available. Further studies are recommended to stratify etiological diagnosis according to sociological, biological and behavioural background.

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