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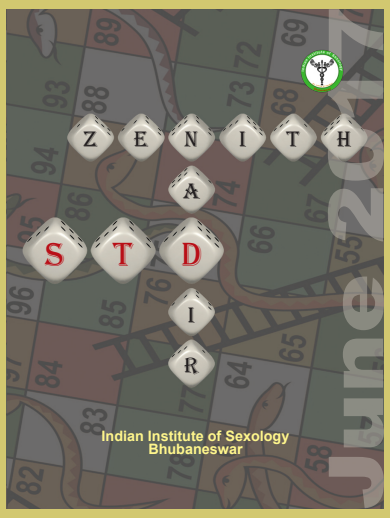

Sexually Transmitted Diseases

An update

Indian Institute of Sexology Bhubaneswar

Editorial

Since ages, sexually transmitted diseases have haunted mankind as a major public health concern. Even ancient literature resounds with descriptions on sexually transmitted diseases. As such sexually transmitted diseases are not bound by and limited to just reproductive ages. Other age groups too have been found to be victims of this universal scourge, regardless of their sex.

The invention of penicillin is a turning point in the history of sexually transmitted diseases and their treatment. The post penicillin era saw a significant reduction in the incidence of sexually transmitted diseases, particularly, syphilis. Likewise, issues of other sexually transmitted diseases of bacterial, fungal and viral etiology came to be tackled well with the invention of generations of highly potent antibiotics, antifungal and antiviral drugs. Safe sexual practices and awareness campaigns too went a long way in ensuring significant grip and control over the spread of sexually transmitted diseases. However, the emergence of AIDS on the medical horizon has hurled renewed challenges at the medical fraternity, with the re-emergence of these conditions along with it.

In terms of area affected, sexually transmitted diseases may also involve and colonize other organ systems of the body. Hence, there is an urgent need to develop clear understanding and actionable insights into sexually transmitted diseases beyond genital transmission and manifestations. This calls for a multidisciplinary approach and integrated care for the holistic management of sexually transmitted diseases.

An important speed-breaker in the field of proper treatment of these diseases has been social stigmas. Cutting across cultures and geographies, stigmas are found to be closely associated with sexually transmitted diseases. Fear of discrimination often restrains affected individuals to seek timely medical help. And if, at all, they seek help, their apprehension about confidentiality tempts them to hide relevant and critical information, further delaying correct diagnosis.

Another major factor that affects the treatment of sexually transmitted diseases is their prevalence among high-risk population (migrants, truckers, intravenous drug users, trans-genders, gays, lesbians and commercial sex workers). Risky sexual behavior of these groups paves the way for higher prevalence of sexually transmitted diseases among them. Targeted intervention is an important method to combat the problem. There is a need to expand the process of identification and enrollment of these people to the treatment plan for arresting the spread of sexually transmitted diseases. Efforts have also been made at multiple levels (government, non-government organizations, and international bodies) to combat sexually transmitted diseases.

These infections, it is felt, need to be addressed at an early stage to obtain improved and better outcomes. It is good to note that many adolescent clinics, these days, are offering tests for easy diagnosis of sexually transmitted infections. Besides, high-risk population groups need to be brought under the sensitization ambit. There is a need to sensitize migrant labor population regarding the risks, and healthy practices. Likewise, sex workers, and trans-genders should be made to attend education camps, and be encouraged to undergo periodical health screening and use barrier contraceptives.

To sign up, imparting sex education, creating health awareness, restricting substance use, targeting vulnerable populations and adopting safe and healthy sexual practices can create a collective front to prevent and effectively checkmate the spread of sexually transmitted diseases. It's, as they say, a stitch in time saves nine.

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Clinical Manifestations of Sexually Transmitted Diseases : An Overview

Dr. Surabhi Dayal | Dr. Kirti Dudeja | Dr. Priyadarshini Sahu

Abstract

The global health burden of sexually transmitted infections including Human Immune Deficiency Virus (HIV) is large and ever increasing. The world health organization estimates that there are around 498 million people aged 15-49 years who are infected each year with chlamydia, gonorrhoea, syphilis and chancroid. Various taboos and stigmas associated with these diseases negatively impact on the treatment seeking behavior and delay the treatment. Reporting of less number of cases also reduces the resources allocated for their control.

Introduction

Sexually transmitted infections are infections that are transmitted by sexual contacts. It is a broad term which includes infections by bacteria, virus, protozoa that result in clinical manifestations involving genitalia and other parts of the body in sexual interaction. In this article we are going to discuss about clinical presentations of six main sexually transmitted diseases which are commonly seen in clinical practice. An overview of chlamydia and gonorrhea infection is also given as these are of common occurrence in dermatology outpatients.

Syphillis

Syphillis also known as 'Great imitator' is a chronic systemic infectious disease caused by

spirochaete Treponema pallidum subspecies pallidum. Based on the modes of the transmission, it is classified into acquired type and congenital type. Acquired type can be early acquired or late acquired.

Classification

1. **Acquired**

A. Early Acquired	B. Late Acquired
1.Primary	1. Late latent
2.Secondary	2. Tertiary syphilis
3.Early latent	Benign tertiary
	Cardiovascular
	Neurosyphillis

2. **Congenital**
   Early congenital
   Late congenital

Pathogenesis

The clinical course of syphilis is extremely varied and is interrupted by various phases of variable duration. Although the exact course of disease is not yet clear, report of Oslo study [1] describes the natural course of disease as follows.

Exposure to Treponema pallidum (after unprotected sex $^{1}/_{3}$ of exposed get infected)

↓

Primary chancre (heals in 3-8 weeks)

↓

Secondary syphilis (heals in 3-9 months)

↓

Early latent syphilis (relapse may occur in 25% cases)

↓

Late latent (>2 years from onset)

↓

↙ ↘

Remission (2/3 cases)

Tertiary (1/3 cases)
- Late
- Cardiosyphilis
- Neurosyphilis

Primary chancre

It presents as a well-defined ulcer with regular raised or rolled out edges and a clean base. Indurated base of chancre giving the feel of a button entitles it with the term hard chancre. Lymph nodes enlarge in 7-10 days, initially unilateral but soon become bilateral and appear small, discrete, non-tender, firm, and rubbery. Chancre may be tender due to secondary bacterial infection and may occur in extragenital sites like oral, anorectal, breast and digits. Proctitis has been reported among homosexuals [1].

Secondary Syphilis

Initially it presents with a rash which is non-vesicular, non-pruritic and bilaterally symmetrical. 'Macular syphilide' is the earliest generalized syphilide which appears as pinkish to coppery red non-scaly macules on trunk, palms and soles soon converting into papular syphilide that presents as annular or discrete circular, corymbose papules. Papules in moist intertriginous areas coalesce to form fleshy, flat topped, broad base masses which are highly contagious are known as condyloma lata. At times they have been reported independent of appearance of skin rash [2].

Other signs and symptoms are as follows-

- Hair – Irregular patches of non-scarring hair loss in occipital and parietal region, popularly known as 'Moth eat on alopecia'.
- Nail – Lusterless, brittle with pitting, splitting and onycholysis.
- Mucous membrane – Irregular serpiginous erosions or ulcers known as 'Snail track ulcers'.
- Constitutional symptoms like fever, malaise, arthralgia, myalgia, and headache are common.
- Bilaterally symmetrical non tender, discrete, mobile, non suppurative firm lymph nodes.
- Anemia, leukocytosis, raised erythrocyte sedimentation rate may be seen in this stage.
- Signs of meningitis may occur.

Early latent syphilis

No clinical signs are appreciated in this stage, however the reaginic and specific tests are positive.

Early relapsing syphilis

25% latent cases relapse back with clinical signs and symptoms due to which this phase is known as 'chancre redux'.

Late syphilis

After 2 years disease enters into a non-infective phase. Reaginic test is positive in low dilution but neurosyphilis needs to be excluded by cerebrospinal fluid (CSF) examination.

Tertiary syphilis

Characteristic lesion is gumma which is single or multiple, varying in size from pin head to a few centimeres and has a central area of tissue necrosis resembling casseous material surrounded by a granulation tissue with a tough outer fibrous border. It heals with central scar. Psoriasiform or scaly lesions may be seen in this stage. Other structures like bones, muscles, joints may be involved. Important organs involved are as follows-

Cardiovascular syphilis

Symptoms appear after 10-40 years from the onset of disease.

Great vessels like aorta, pulmonary artery may show thickening, median wall destruction followed by dilatation of vessel. Aortic aneurysm is seen in 20% of cases. Chest X-ray may show egg shell calcification.

Neurosyphillis

Features of meningitis may suggest its onset with CSF examination showing high cell count (predominantly lymphocytes) and raised proteins.

Herpes Genitalis

It is one of the commonest occurring sexually transmitted disease, which is caused by Herpes virus hominis. There are two types of Herpes

simplex viruses HSV1 and HSV2. HSV 2 is more commonly seen in genital area, however genital HSV1 is being commonly seen in young adults now-a-days [3].

Pathogenesis

Herpes virus infects epidermal cells leading to ballooning degeneration of cells. The outcome of this change is formation of multinucleate giant cells with intranuclear inclusion bodies which is one of the golden sign for making the diagnosis.

Primary genital herpes

The primary lesions occur usually with constitutional symptoms like fever, malaise, headache, myalgia followed by skin lesions. The lesions start as grouped vesicles which soon rupture to form erosions coalescing together to form superficial ulcers with polycyclic margins. New lesions continue to occur for 8-10 days and viral shedding usually continues for the first 2 weeks. Scarring is uncommon.

First episode of genital herpes may lead to

- Secondary bacterial infection
- CNS involvement like Aseptic meningitis, Transverse myelitis, Sacral radiculopathy
- Extragenital lesions frequently seen on thighs, buttocks and groins

Recurrent genital herpes

Episodes are milder and last for only 5-7 days. Over 90% patients have prodromal symptoms varying from mild tingling sensation to shooting pain prior to appearance of lesion. Healing is usually complete in 7-10 days.

Herpes genitalis infection in HIV positive patients

Atypical presentations are common with deep progressive ulcers. Continuous and prolonged viral shedding is the commonest sequelae. Hemorrhagic deep ecthyma like ulcer may form. Systemic involvement like hepatitis, pneumonitis is more common in such immunocompromised state.

Anogenital Warts

It is caused by human papilloma virus (HPV) which is a DNA virus. Both cell mediated immunity and humoral immunity are hampered.

Lesions appear after the incubation period of 1-8 months with an average duration of 3 months. In males, genital warts appear most commonly in subprepucial region, frenulum followed by glans and coronal sulcus. In females, common sites involved are posterior part of introitus, labia, perineum, and perianal area. Various clinical presentations are as follows [4].

1. Condyloma accuminata - Lesions are pedunculated cauliflower like with fissures and irregular surface.
2. Papular wart - Non pedunculated dome shaped papules are located in fully keratinized skin.
3. Verruca vulgaris type - Firm papular lesions with slightly rough horny surface with no pedicle are seen.
4. Flat topped papules
5. Bowenoid papulosis - It is a variant of papular wart characterized by hyperpigmented, dome shaped, smooth, flat topped papules. It is caused by HPV 16 and shows high grade squamous intra-epithelial neoplasia.
6. Buschke Lowenstein tumor - It is a verrucous hyper-keratotic exophytic growth in genital and perianal area.

Chancroid

Chancroid, also known as 'soft sore' is an acute infectious disease caused by gram negative bacillus Haemophillus ducreyi. It's Incubation period is usually short, ranging from 1-14 days.

Initially, it starts with a small inflammatory papule surrounded by erythema which progresses to form a well circumscribed painful ulcer covered with purulent exudates. Base of the ulcer is non-indurated and has ragged undermined edges. Removal of the exudate reveals unevenly distributed, highly vascular granulation tissue which may bleed on scraping or gentle manipulation. Painful inguinal lymphadenopathy is seen. Nodes are mostly unilateral and matted together. They may suppurate and form an abscess. If untreated these may rupture through the skin with formation of a single sinus which may breakdown to form a chancroidal ulcer. Other complications include phimosis, paraphimosis and urethral fistula.

Clinical variants of chancroid include

- Giant chancroid
- Phagedenic chancroid
- Follicular chancroid
- Popular chancroid
- Dwarf chancroid

Lymphogranuloma Venereum

Lymphogranuloma venereum (LGV) is a sexually transmitted infection caused by gram negative intracellular bacilli Chlamydia trachomatis serovars L1, L2, L3. It is also known as 'Tropical bubo'. Incubation period varies from 1-2 weeks.

There are three stages of infection [5,6].

1. Primary
2. Secondary (inguinal)
3. Tertiary (complication)

Primary stage

Primary lesion mostly goes unnoticed but about ¼ of the patients may present with a papule, a vesicle, an erosion or an ulcerated area at the site of inoculation.

Secondary stage

Characteristic unilateral inflammatory swelling of inguinal and their draining lymph nodes is seen which may be bilateral in about 1/3 of the cases. Lymph nodes may get matted and overlying skin becomes thick, dusky and it soon ruptures [7,8]. In 20% of the patients femoral group of lymph nodes are also involved separated from inguinal lymph nodes by pauparts ligament giving the term 'groove sign of greenblat' [8]. Fever, sweating, malaise may be present. Rupture of the lymph nodes form multiple sinus and get resolved after some time.

Complications

- Lymphatic obstruction leads to elephantiasis of the genitals.
- In males, chronic massive oedema may give rise to 'ram horn penis' and 'saxophone penis'.
- Likewise in females chronic edema may cause enlargement of the vulva giving it a fancy name 'esthiomene' [8,9].

Donovanosis

Also known as 'Granuloma inguinale', it is a slowly progressive, chronic, mildly contagious ulcerative disease caused by Calymmatobacterium granulomatis. One of the characteristic histopathological feature is the presence of intracytoplasmic structure, known as 'Donovan bodies'. Incubation period ranges from 3 days to 3 months.

It begins as single or multiple firm papules, which rupture to form a well-defined painless ulcer with beefy red color and granulomatous base and bleeds easily on touch. Phimosis or lymphoedema may occur in active stage only. Lymph nodes are less commonly involved but secondary infection may cause them to appear. However lesions present in the groins may give the appearance of an enlarged lymph node, popularizing the term 'Pseudo bubo'. Other sites like perianal, inguinal region may be involved in 10-20% of cases.

Other morphological variants are-

- Classical or fleshy exuberant type - Most commonly seen variant with a characteristic finding of exuberant beefy red granulation tissue over the top of the lesion.
- Hypertrophic type - Raised warty looking appearance of the lesion.
- Sclerotic or cicatricial type - Extensive fibrous tissue is present which may lead to deformity of external genitalia.
- Destructive or necrotic type - mainly associated with super-added anaerobic infection.

Gonorrhoea

It is caused by gram negative diplococci Neisseria gonorrhoeae. Incubation period ranges from 1 to 14 days. Mucopurulent discharge per urethra is the most common complaint in men. Over a span of 1-2 days this discharge becomes thick, profuse and purulent with increased tendency of burning micturition [10]. In females, moderate degree of burning micturition, frequency and urgency is the earliest complaint. However scanty mucoid discharge may follow. Complications include epididymitis, prostatitis in men and salpangitis and bartholin abscess in women.

Chlamydia

Chlamydia trachomatis serovar B, D, E, F, G, H, I, J and K is one of the commonest cause of nongonococcal urethritis now a days. Incubation period ranges from 7 to 21 days. Dysuria followed by mild urethral discharge is the commonest complaint in most of the cases. Some patients may present with hematuria owing to the involvement of bladder.

Without proper treatment other organs may get involved and can lead to epididymitis, prostatitis and proctitis in men and cervicitis, endometritis and salpingitis in women.

Conclusion

Sexually transmitted diseases are caused by a diverse group of organisms. Many individuals have asymptomatic early infections, and this favours onward transmission. Various complications leading to infertility, postabortal and postpartum infections and significant discomfort to the normal sexual life of a person is a matter of concern. A coordinated approach is therefore required to reverse the rising trend of sexually transmitted infections. This approach will be effective if signs and symptoms of infections are recognized early, correct diagnosis is done and treatment is given according to accepted protocol.

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Our Vision

Harmonious existence between male and female leading the mankind towards ultimate bliss

Our Goals

INDIAN INSTITUTE OF SEXOLOGY BHUBANESWAR (IISB)

- *Aims to facilitate the integration of knowledge and expertise across various disciplines like medicine, psychology, sociology, law and ethics for greater understanding of complexities of human sexuality*
- *Aims to adequately address the individual sexual problems and social issues*

Objectives

- *To bring experts of different disciplines to a common platform for sharing of knowledge and views on human sexuality*
- *To promote research on human sexuality*
- *To impart training on 'Sexology' and strengthen the discipline of 'Sexual Medicine'*
- *To encourage medical professionals to choose 'Sexual Medicine' as a career*
- *To create public awareness on human sexuality and gender issues*
- *To advocate any social change for betterment of mankind*

Diagnostic Approach to A Patient with Sexually Transmitted Disease

Dr. Pritilata Panda | Dr. Sarvodaya Tripathy

Abstract

Sexually transmitted diseases (STDs) carry significant public health importance. After emergence of Acquired Immune Deficiency Syndrome (AIDS), there is an increased reporting of STDs. Understanding about the STDs is highly essential for prescribing correct treatment. Evaluation of a patient suffering from sexually transmitted disease needs specific considerations and due cautions. Like any other medical illnesses, sexually transmitted diseases need thorough evaluation by careful history taking, detailed physical examination with focus on local (examination of the lesion and genitalia) examination and specific microbiological investigation. There is a need for collaborative approach between the microbiologist and the clinicians for holistic assessment of the patients with sexually transmitted diseases.

Introduction

The terms 'Sexually transmitted diseases' and 'Sexually transmitted infections' are frequently used interchangeably; however, there exists conceptual differences between these two terms. Sexually transmitted infections (STIs) refer to 'Infections caused by microorganisms that can be transmitted from one person to another through sexual contact' [1]. When associated with genital symptoms and complications, these STIs are called as sexually transmitted diseases (STDs).

According to World Health Organisation (WHO), approximately 357 million new cases

of the four main (gonorrhoea, chlamydia, syphilis and trichomoniasis) curable sexually transmitted infections are detected every year [2]. National Family Health Survey 2 (NFHS 2) has revealed that the prevalence of symptoms of STI in women and men vary significantly [1]. It ranges from 23% to 43% in women and 4% to 9% in men [1]. Existing clinical services are struggling to meet the needs to control STIs. Often the high risk population is deprived of the services, which is a potential challenge to STI control programs.

The majority of STIs have no symptoms or only mild symptoms that may be difficult to recognize. These asymptomatic carriers are an important source of transmission in the community. These carriers can be evaluated systematically for the early detection of STIs. Regular community surveillance are going on through various programmes under WHO and Centre for Disease Control & prevention (CDC) in collaboration with Government of India and various Non-Government Organizations (NGOs) at the grass root level. A lot of emphasis has been given to clinical assessment of patients with STDs and it requires specific skills. So programs have given importance to train doctors and paramedical staffs in fundamental clinical skills for diagnosing and treating STDs.

History taking in STDs

History taking is a very important aspect of evaluating a patient with sexually transmitted disease. Assuring the patient of privacy and confidentiality is of utmost importance to obtain adequate and correct information from the patient. Building a good rapport, making the patient comfortable and use of culturally acceptable questions are emphasized by the National AIDS Control Organization (NACO), while approaching a patient with STD. A respectful, empathetic and understanding attitude of the examiner towards the patient is essential.

As suggested by NACO, a standard check list may be used for patients with STDs. Some of the important aspects of history in patients with STD are [1] :

- General information including marital status, contraceptive use, menstrual history (in females)
- Duration of symptoms
- Contact history including current partners, new partners in last 3 months
- Assessing high risk behaviour (adolescent sex, multiple sex partners, unnatural sexual practices, unprotected sexual activity, drug abuse)
- Past history of similar illness
- Treatment history for both present and past STDs
- Drug allergies, if any

History taking also needs to emphasize on various social factors that are likely to have impact on development of STDs. Social factors influence gender role as well as sexual practices [1].

Physical examination

Physical examination should be done in a well-lighted room with adequate privacy. Examination room should have an examination table. The patient needs to be examined in lying down position, after obtaining informed consent. The part of the body to be examined should be adequately exposed. The examiner should take appropriate protective measures while conducting the physical examination. Following points are to be taken into account during physical examination [1] :

- General examination should include vital signs, inspection of skin and mucosal lesions if present.
- Inspection and palpation of genital lesions and surrounding areas for swellings and discharge. Pubic hair should be examined for pediculosis, matting of hair, folliculitis etc.
- Inguinal lymph nodes should be examined for swelling, consistency, number, arrangement, fixity to deeper structure and signs of inflammation.
- Per-abdomen, per-speculum and bimanual examination for females should be conducted.

Specimen collection

Ulcerative lesions are caused by Treponema pallidum, Haemophillus ducreyi, Klebsiella granulomatis and Herpes simplex infection. Chancre that occurs in syphilis as an indurated painless ulcer, is gently abrade with dry gauze, blood-stained exudate is wiped and gentle pressure is applied till clear serous fluid exudes. This fluid is collected in a capillary tube or a coverslip. Ends of capillary tube and edges of the coverslip are sealed with petroleum jelly to maintain anaerobic environment. This fluid can be tested for live T. pallidum [3, 4].

Chancroid caused by H. ducreyi can be sampled after cleaning superficial debris with gauze. Specimen is collected from the undermined edge or base of the ulcer. For donovanosis caused by K. granulomatis, tissue cut from the border of the ulcer can be taken as sample and impression smear can be prepared from the inner surface of the cut tissue. The smear can then be examined by Giemsa or Leishman staining. Tzanck smear followed by Giemsa stain can be used for Herpes, Molluscum and for Chancroid [3, 5]. Intact bubo aspirate can be used for demonstration of H. ducreyi and Chlamydia. Non flocculent bubo of syphilis can also be aspirated and T. pallidum can be demonstrated.

Urethral discharge can occur in gonorrhoea and non-gonococcal urethritis caused by Chlamydia trachomatis, Mycoplasma hominis and Ureaplasma urealyticum.

Urethral discharge may be collected after thorough cleaning of the urethral meatus. Urethral massage against the pubic symphysis in females should be done to express the urethral discharge, which need to be collected by using a swab. Alternatively, a flexible swab can be inserted 2cm deep into the urethra, rotated and then withdrawn. The procedure should be done very gently to avoid any injury to the tissues. First void urine (20ml) in males, as a sample for microbiological examination has also been recommended [5, 6].

The presence of intracellular gram-negative diplococci in smears is considered positive diagnosis. Urethral smears from symptomatic men has a sensitivity of > 95% and in women it ranges between 30–50% [7]. Rectal smear and pharyngeal smear sensitivity is low. Isolation of N. gonorrhoeae, is still considered necessary for the confirmation of the diagnosis of gonorrhoea, whenever the resources are available. The sensitivity of culture is thought to be 80–100% [7], but is dependent on a good specimen and isolation procedure.

Secretions from the vagina can be collected using a sterile swab moistened with normal saline, inserted into the posterior fornix of vagina. Cervical secretions are to be collected using a speculum without any lubrication. Swab can be inserted deep into the endo-cervical canal [5].

Blood can be collected for serological diagnosis and nucleic acid testing [5]. Specimens should be packed and transported properly ensuring the safety of people involved in handling and packaging of the specimens and the viability of the material. Amie's medium and Stuart's medium can be used for transportation of specimens collected in swabs [5].

Diagnosis and management of STDs

The major objectives of management of STDs are early detection, appropriate and holistic treatment, treatment of partners and modification of risky sexual behaviour. There are two main approaches for the management of STDs [1].

Etiological approach – Based on the laboratory tests, definite causative agent is identified and treatment, specific to that particular agent is then suggested. Treatment starts only after laboratory confirmation; so over-treatment of patient and partner can be avoided. However, drop-out of patient in follow up is there. In this type of approach trained technician and infrastructure is needed for conducting the laboratory tests, so the overall cost of management becomes relatively high.

The organism can be visualized under the microscope from the direct sample [5, 6]. The important ones being -

- Motile parasites of Trichomonas vaginalis
- Clue cells in Bacterial vaginosis
- Budding yeast cells in Candida infection seen by potassium hydroxide mount and gram stain
- Dark field microscopy for Treponema pallidum
- Tzanck smear for herpetic lesions can show inclusion bodies

Culture can be done for the following organisms [5] :

- N. gonorrhoea in chocolate agar and selective media (like lysed blood agar with specific antibiotics). Identification can be done by colony morphology, staining, oxidase test. Antibiotic testing must be done since antibiotic resistance are reported in gonococci.
- Candida can be cultured in Sabouraud's dextrose agar
- Enriched gonococcus agar and enriched Muller Hinton agar can be used for culture of H. ducreyi.
- Tissue culture on Mc coy, Hep 2 and Hela cell lines for Chlamydia trachomatis. Human diploid fibroblast, Vero cell line can be used for herpes viral infection if available. Diamond's Trichomonas medium can be used for T. vaginalis. But these techniques an technically demanding and costly.

So diagnosis is done mostly by serological methods, nucleic acid amplification test, and rapid point of care tests (immuno-chromatographic tests, dipstick tests etc.) [5]. Amsel's criteria and Nugent scoring applied for diagnosis of bacterial vaginosis [5].

Syndromic approach – In resource scarce settings like primary health centre, treatment is recommended on the basis of clinical manifestations. Treatment can be initiated at the first visit itself. This approach is relatively inexpensive because laboratory tests are not done for initiating treatment. Evidences suggest that syndromic approach is helpful in low socioeconomic countries especially for high risk groups and symptomatic individuals [8]. This approach has also been recommended by WHO in such countries [8].

Following are the seven major STI syndromes that are included in the National Guidelines on

Management of STI [1].

- Urethral discharge
- Vaginal discharge
- Vesicular and/or non-vesicular genital ulcers
- Inguinal bubo
- Lower abdominal Pain
- Acute scrotal pain or swelling
- Genital skin conditions

The guidelines of NACO describes the step-wise approach and management of STDs on the basis of specific set of symptoms [1].

Conclusion

In tertiary care hospitals patients with STDs most often visit to departments of obstetrics and gynaecology, dermatology. However they may consult in outpatient departments of medicine, paediatrics and surgery. Patients with STDs are usually referred for microbiological evaluation. There is a need of collaboration between the microbiologist and the clinician to evaluate the patient at first consultation. This collaboration and a collective effort will facilitate the holistic approach towards the patients with STDs.

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Please join hands with us. We need experts in every aspects of 'Human Sexuality'. We need editorial advisors and members for editorial board.

Laboratory Detection of Sexually Transmitted Diseases

Dr. Bhawna Nagel | Dr. Kangana Sengar

Abstract

Laboratory investigations required to diagnose STDs in a developing country like India are not always feasible or cost effective. Traditionally, diagnosis and treatment of STDs has been dependant on syndromic approach based on clinical symptoms but strengthening lab services for specific diagnosis is important to prevent overtreatment and development of antimicrobial resistance. Rapid and cost effective POC (point of contact) tests with reasonable sensitivity and specificity are being developed to address STDs at primary health care level and are especially useful in centres with low patient return rate. More specific, tedious, quality controlled procedures like culture and NAAT (nucleic acid amplification technique) assays can be carried out in reference laboratories with high sample load and high throughput.

Introduction

Sexually transmitted diseases are a major health concern in a developing country like India and pose number of challenges from diagnosis to treatment. Sexually Transmitted Diseases (STDs) can be caused by a variety of pathogens including bacteria, virus, fungus and protozoa. Excluding HIV, recent trends report a decline in bacterial STDs like gonorrhoea and chancroid with an upswing in viral STDs like herpes genitalis and condyloma acuminata [1]. Although both men and women are affected, the morbidity, complications and sequelae are much more significant in women like pelvic inflammatory disease (PID), ectopic pregnancy, infertility, cervical cancer etc. In the recent years,

syndromic approach was devised by World Health Organisation (WHO) for diagnosis and treatment of STDs in resource poor settings to circumvent expensive and laborious lab testing and has been successfully adopted by National AIDS Control Organisation (NACO) in India. Nevertheless, lab services need to be strengthened because apart from diagnosing STDs, lab tests also serve as useful tools for antimicrobial susceptibility testing, validation of syndromic management algorithms, screening of asymptomatic at risk individuals, disease surveillance and quality assurance [2].

In this review article, we discuss lab diagnosis of individual pathogens under three main headings according to presenting complaints and their differential diagnosis.

1.Patients presenting with cervicitis, vulvovaginitis, urethritis, proctitis and pharyngitis

1.1 Gonorrhoea

Gonorrhoea and chlamydia are the most common bacterial STDs prevalent worldwide [3]. The causative gram negative bacteria Neisseria gonorrhoea leads to lower urogenital infections, predominantly urethritis in males and cervicitis in females with purulent discharge. Proctitis and pharyngitis are seen more commonly in homosexual males. Conjunctivitis in adults and ophthalmia neonatorum in newborn (perinatal infection) is also seen.

Microscopy is highly sensitive and specific for urethral discharge samples in symptomatic males. Gram stained smears prepared from the discharge demonstrates intracellular gram negative diplococcii polymorphs. It is not recommended for rectal and pharyngeal samples due to lower sensitivity and large number of other obscuring organisms.

Culture of causative organism is inexpensive, highly sensitive and specific and also allows for antimicrobial susceptibility testing which is of utmost importance in gonorrhoea due to frequent emergence of antimicrobial resistance [4,5]. NAAT (nucleic acid amplification test) which detect specific DNA (deoxyribonucleic acid) or RNA (ribonucleic acid) sequences of the bacteria have been developed and are more sensitive than culture, especially for rectal and pharyngeal specimens but may lead to false positives (cross reactivity with commensal Neisseria species) which can be reduced by conducting a second NAAT using a different target sequence. Since no internationally licenced NAATs are yet available, they need to be validated in-house within the laboratories [2]. The ideal sample is first void urine from asymptomatic males and vaginal/cervical swab in females.

Serological tests and rapid POC (point of contact) tests are not yet approved and commercially available and are under research.

1.2 Chlamydia

Chlamydia trachomatis has 3 biovars based on tissue tropism, those that cause endemic blinding trachoma (serovar A-C), sexually transmitted urogenital infections (serovar D-K) and invasive lymphogranuloma venereum (serovar L1,L2,L3).

Internationally approved NAAT assays are the recommended test of choice for diagnosis and screening of both genital and extragenital chlamydial infections wherever feasible and are preferred over culture methods as they are more sensitive, do not require invasive sampling (urine or vaginal swabs can be used instead of urethral

or endocervical swabs) or stringent transport and storage (not dependant on organism viability), have lesser turn around time and can test for both chlamydia and gonorrhoea simultaneously [6]. In addition, antimicrobial susceptibility testing which requires culture is not routinely advised in chlamydia. Although NAATs may not be feasible in resource constrained settings, the problem can be addressed by creating regional reference labs especially in high prevalence areas where testing of large sample load and high through put automation will help reducing costs and turn around time while maintaining quality reporting.

Despite being less sensitive, POC tests which are ELISA (enzyme linked immunosorbent assay) based methods, offer the ability to test and treat the patient on site which is extremely valuable in resource poor, high prevalence settings and where patient follow up rate is low [7].

Serology measures antibody response to chlamydial antigens which may be delayed or not measurable in case of uncomplicated urogenital infections. It can be used for diagnosing complicated infections, LGV and neonatal pneumonia where antibody titres are high.

1.3 Trichomoniasis

It is the commonest non viral, non bacterial STD prevalent worldwide caused by flagellated protozoan Trichomonas vaginalis leading to cervicitis and frothy white discharge in females and urethritis in males. The ratio of infection in females to males is 4:1 [8,9]. Majority of infections are asymptomatic [10], yet lab diagnosis is important as trichomonas infection significantly increases the risk of HIV transmission and requires treatment to reduce genital compartment viral load.

Microscopy serves as a useful first line diagnostic test being highly specific but negative tests require further evaluation. Sensitivity is highest in symptomatic females. Vaginal swab in females and urine sediment in males is examined by wet mount microscopy for motile trichomonads within 10 minutes of collection.

POC tests are antigen detection assays and are more sensitive than microscopy but most of these can be used only for symptomatic females.

Culture is more sensitive than microscopy and POC tests but is more tedious and time consuming. Moreover, routine antimicrobial susceptibility testing is also not recommended. Hence, NAATs which are most sensitive tests and offer greater flexibility in sample collection are recommended. In addition, there are NAATs which test for gonorrhoea, chlamydia and trichomonas simultaneously.

1.4 Mycoplasma

Mycoplasma genitalium is causative organism of non gonococcal urethritis, cervicitis and upper genital tract infection in women while Mycoplasma hominis and Ureaplasmas are commensals.

NAAT is the only practical method for diagnosis but no assay has been FDA (Food and Drug Administration) approved yet and hence requires in-house validation. Sample preparation and assay sensitivity should be optimal since concentration of mycoplasma is 100 fold lower than chlamydia with multiplex assays having slightly lower sensitivity [2].

Due to high frequency of resistance to macrolides and fluoroquinolone, antimicrobial susceptibility testing is also recommended by using broth dilution minimal inhibitory concentration determination and detecting mutated sequences using molecular methods.

1.5 Bacterial Vaginosis

Bacterial vaginosis is not a sexually transmitted disease but sexual activity increases its risk of acquisition [11]. It's the most common cause of vaginal discharge in women of reproductive age group.

Amsel's criteria [12] used for diagnosing bacterial vaginosis include:

1. Homogenous greyish white adherent discharge
2. Vaginal pH of more than 4.5 measured by pH indicator strips (most sensitive but least specific as raised pH may occur due to contamination of vaginal fluid with cervical mucus, semen or menstrual blood and in T. vaginalis infection)
3. Release of fishy amine odour from vaginal fluid when mixed with 10% KOH (potassium hydroxide) solution
4. Clue cells on microscopic examination of vaginal fluid.

Gram stained vaginal smears under microscope are the preferred method for lab diagnosis and are interpreted using Ison-Hay criteria or Nugents score. Culture is of no diagnostic value.

2. Patients presenting with ulcers or lesions

2.1 Syphilis

Venereal transmission of the causative agent Treponema pallidum occurs through direct contact with treponeme rich ulcers of primary and secondary syphilis.

Direct diagnostic methods

1. Demonstration of motile T. pallidum by dark-field microscopy remains the simplest and reliable method, especially in treponeme rich ulcers of primary stage and immunodeficient individuals [13].
2. Direct fluorescent antibody (DFA) test employs fluorescein isothiocyanate-labelled antibody against treponemal antigen and does not require motile treponemes but it cannot differentiate venereal syphilis from endemic syphilis (yaws, pinta) [14].
3. PCR (polymerase chain reaction) based methods detect T. pallidum DNA with high sensitivity and specificity are test of choice for congenital syphilis, neurosyphilis and early primary syphilis [15, 16]. Multiplex PCR assays which detect T. pallidum, H. ducreyi and HSV simultaneously are also available now.

Indirect diagnostic methods

1. Non treponemal serologic tests are rapid, simple, inexpensive micro-flocculation tests and include VDRL (venereal disease research laboratory) slide test and rapid plasma reagin (RPR) card test. These tests help to establish a baseline titre for evaluation of recent infection, response to treatment and detecting reinfection/relapse in persons with persistently reactive titre. Sensitivity is reduced in primary syphilis and late latent syphilis. Prozone reactions and cross reactivity lead to false negative and positive results respectively. [17].
2. Treponemal serological tests include Treponema pallidum particle agglutination (TP-PA), EIA (enzyme immune-assay) and western blot tests. These tests are more specific but may remain reactive for years and do not differentiate venereal syphilis from endemic syphilis. Hence, these tests are used mainly to verify reactivity in non treponemal tests.

2.2 HSV

Herpes simplex virus type 1 (HSV-1) and type 2 (HSV-2) are large double-stranded DNA viruses with the former acquired in childhood causing oral lesions while the latter causes sexually transmitted vesicular genital lesions.

Direct cytological examination is not used for diagnosis owing to low sensitivity and specificity.

Detection of viral antigen in lesional material is done using direct immunofluorescence (IF), immunoperoxidase (IP) staining or capture ELISA. Direct IF and IP staining have similar sensitivity but the former is more time-consuming and expensive (requires fluorescence microscope). Capture ELISA has comparable or higher sensitivity than culture for typical presentations but lower when cervical or urethral swabs are used.

Culture and molecular methods are the mainstay for diagnosis [18]. Cell cultures demonstrating cytopathic effects are further confirmed and typed using direct IF, IP staining or NAAT assay. Sensitivity of culture decreases as lesions begin to crust. NAAT assays are most sensitive and even detect asymptomatic HSV shedding. Serological assays are only used for screening of HSV exposure in high risk group like HIV infected individuals and asymptomatic partners of HSV infected individuals.

2.3 Chancroid

Chancroid is caused by Haemophilus ducreyi and produces painful penile, perianal and vulval ulcers alongwith suppurative inguinal lymphadenitis. Unlike syphilitic ulcer, chancroid ulcer is painful, irregular with undermined edges and usually not indurated.

Direct microscopy has very low sensitivity and specificity due to secondary contamination of ulcer by polymicrobial flora. Bacteriological culture and biochemical reactions for H. ducreyi remains the gold standard for diagnosis of chancroid [19]. Successful culture is critically dependent on using freshly made media (ideally fewer than 7 days old) and correct incubation conditions. H. ducreyi colonies are positive for oxidase, nitrate reduction and porphyrin test and negative for catalase, indole and urease tests [20].

Serological assays and molecular methods are not yet commercially available and are under research.

2.4 Donovanosis

Donovanosis or granuloma inguinale is caused by Klebsiella granulomatis, a Gram-negative bacterium leading to beefy red, hypertrophic, granulomatous genital ulcers. Pseudo-buboes are formed after secondary infection.

Laboratory diagnosis depends on the visualization of 'Donovan bodies' within cytoplasmic vacuoles of histiocytes, plasma cells and polymorphs in smears prepared from lesions or histological sections of tissue biopsies stained using Warthin–Starry silver impregnation reagent [21]. The 'Donovan bodies' appear as blue to purple coloured organisms surrounded by a prominent clear to acidophilic pink capsule and resemble closed safety pins.

Culture is tedious and done only in specialist centres. NAAT or serological assays are currently not available to assist in diagnosis [22].

2.5 HPV

Human papillomavirus is divided into high risk (HR HPV – 16,18,31,33 etc) and low risk (LR HPV-6,11) types with the former causing precancerous and cancerous anogenital lesions while the latter

causing anogenital warts (condyloma acuminata) and non-precancerous lesions. It is a fairly common sexually transmitted, transient infection with slow clearance following cell mediated immune response [23]. Persistent infection is a pre-requisite for development of cancer. The humoral response mounted after infection is neither able to clear the virus, nor useful diagnostically but may be used for surveillance purpose. Since the virus is not readily cultivable, diagnosis mainly relies on molecular methods for demonstration of HPV DNA and have excellent negative predictive value. When combined with cytology (pap smear), HPV DNA testing becomes more cost effective for screening of cervical carcinoma [24, 25].

3. HIV

HIV is transmitted through body fluids via sexual route or contaminated blood products. The two major types of virus, HIV-1 (sub types A-K, N and O) and HIV-2 cross react heavily and require specific antigen testing for differentiation. Diagnostic tests for HIV are mainly serological and include:

3.1 Enzyme immunoassays (EIA)

The latest third and fourth generation assays can detect Ig M antibodies and viral antigen respectively in addition to viral antibodies thereby enhancing chances of detection in the window period.

3.2 Rapid tests

These are based on same principle as EIA but provide faster results due to utilisation of high antigen concentration and more sensitive colour detection reagents. Being highly sensitive, these tests are the first line of investigation with negative results reported as negative and positive results repeated with kits using different antigens and other confirmatory assays [26, 27].

3.3 Confirmatory assays

IFA (Immunofluorescence assay) have been largely replaced by WB (Western Blot) and LIA (Line Immunoassays). But unlike EIA, none of these can detect Ig M antibodies or viral antigens and are more expensive, hence serial or parallel EIA testing algorithms can suffice at a much reduced cost in resource poor settings.

3.4 Molecular methods like RT (reverse transcriptase)

PCR and NAAT are used for detecting viral RNA, DNA, enzymes and proteins. These methods are useful for early diagnosis in infants born to seropositive mothers [28], diagnosing acutely infected individuals in window period and assessing viral load for follow-up of infected patients.

For monitoring HIV infection, CD4 counting is done by flow cytometry.

Conclusion

Simple, cost effective and sensitive lab tests should be selected for screening followed by repeat testing or testing with more specific methods like culture or PCR for confirmation of diagnosis. Collecting the sample from ideal site, ensuring optimal transport conditions and maintaining strict quality control in labs are essential for maintaining quality reporting which has direct effect on patient care.

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Management of Sexually Transmitted Diseases

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Abstract

Sexually transmitted diseases (STD) are a variety of infections which are caused by the microorganisms including viruses that are acquired through sexual contact. These infections are manifested as various group of symptoms or syndromes. Early diagnosis and complete treatment remains the keystone for reducing the burden and preventing transmission. Health care providers must be well versed with the strategy of treatment and prevention of these STDs. Complete treatment of some of these infections take months and hence close patient and contact follow up is required.

Introduction

The global health burden of sexually transmitted diseases and Human Immunodeficiency Virus (HIV) infections is large and increasing. Sexually transmitted infections are caused by diverse group of microorganisms. Many individuals have asymptomatic early infections which favor onward transmission and delay in diagnosis. Apart from the serious complications of sexually transmitted infections, the greatest threat is posed by the fact that they favor acquisition and transmission of HIV [1,2,3]. Therefore a coordinated multiagency approach involving health, education and other government departments is required with emphasis on behavior change and condom use during sex. This review discusses the diagnosis and treatment protocols of the major sexually transmitted infections – anogenital warts, genital ulcer diseases (herpes genitalis, chancroid, syphilis), granuloma inguinale,

lymphogranuloma venereum, gonorrhoea and genital chlamydia infections.

Anogenital Warts

Anogenital warts are caused by Human Papilloma Virus (HPV), more than 90% cases by HPV 6 and 11.

Treatment

I. For external anogenital warts [1,4,5]

Patient applied	Provider administered
Imiquimod 3.75% or 5% cream	Cryotherapy with liquid nitrogen
Or Podofilox 0.5 % solution/ gel	Or Surgical removal by scissor/ shave excision, curettage, laser or electro surgery
Or Sinecatechins 15% ointment	Or Trichloroacetic acid (TCA)/ Bichloroacetic acid (BCA) 80-90% solution
	Or Podophyllin resin 10-25% in compound tincture of benzoin
	Or Intra-lesional interferons

II. For urethral meatus warts [1, 5] : Cryotherapy with liquid nitrogen
Or surgical removal

III. For vaginal / cervical/ intra-anal warts [1, 5] : Cryotherapy with liquid nitrogen
Or Surgical removal
Or TCA/ BCA 80-90% solution

Table showing treatment options for anogenital warts, regime, instructions and their adverse effects [1, 4]

	Regime	Special instructions	Adverse effects
Imiquimod 5% / 3.5% cream	5% cream : once at night time for 3 days per week for maximum upto 16 weeks 3.5% cream: once daily at night time	Wash with soap and water 6-10 hrs after application	Local irritation, redness, induration, vesiculation, hypopigmentation. Limited data in pregnancy

Diagnosis

Anogenital warts are diagnosed mainly by visual inspection. HPV tests should not be routinely done because results don't influence clinical management. Biopsy is required in case of atypical presentation and uncertain diagnosis [1].

Podofilox (podophyllotoxin) 0.5% solution or gel	Twice daily for 3 consecutive days of week for maximum up to 4 weeks	Total area should not exceed 10 sq. cm Total volume should not exceed 0.5 ml/day	Local irritation with mild to moderate pain Contraindicated in pregnancy
Sinecatechins (green tea extract) 15% ointment	Thrice daily (0.5 cm strand of ointment is applied to each wart) for maximum up to 16 weeks	Do not wash Avoid sexual contact while ointment is on skin	Local inflammation Not given in HIV, pregnancy, genital herpes
Cryotherapy	Once per week	Local anesthesia might facilitate if area is large	Pain during and after application, necrosis, blistering
TCA, BCA 80-90% solution	Once per week	Use small amounts Allow to dry before patient sits/stands If applied in excess or in case of pain, neutralize with soda bicarbonate, liquid soap or talc	Spreads to adjacent tissues
Podophyllin 10-25% in compound tincture of benzoin	Once per week	Wash after 1-4 hrs Use <0.5 ml per session and on <10 sq. cm area of warts Treatment area should not have open wounds/ friable tissue	Local inflammation Due to systemic toxicity, no longer recommended Not safe in pregnancy

Chancroid

Chancroid is a genital ulcer disease caused by bacterium Haemophilus ducreyi.

Diagnosis: All persons with genital/ anal/ perianal ulcers should be evaluated and following investigations should be done [6,7,8] :

1. Test for Haemophilus ducreyi - Direct smear is recommended as the first step, although it lacks both sensitivity and specificity for definite diagnosis. Smear is taken from the base of the ulcer and stained with Gram's or Giemsa stain. The bacilli are seen as gram negative coccobacilli, with a typical 'school of fish', 'rail-road track' or 'finger prints' appearance. A definite diagnosis require growing of organism in culture which include gonococcal agar base

with 2% bovine hemoglobin and 5% fetal calf serum and Mueller-Hinton agar with 5% chololatized horse blood.

2. Syphilis serology / dark field examination/ Polymerase Chain Reaction (PCR) for treponema pallidum deoxyribo-nucleic acid (DNA)
3. Culture / PCR for genital herpes

For clinical purposes, diagnosis of chancroid is made if all of the following criteria are met [1,7] :

1. One or more painful genital ulcers
2. Painful genital ulcer with regional lymphadenopathy (typical for chancroid)
3. No evidence of treponema pallidum by dark field examination of ulcer exudates or by serologic test for syphilis performed at least 7 days after onset of ulcer
4. Negative Herpes Simplex Virus (HSV) culture / PCR

Treatment

The sexually transmitted diseases guidelines, 2015 by Centers for Disease Control and Prevention (CDC) [1,5] recommends the following regimens:

Azithromycin 1g orally single dose

Or Ceftriaxone 250 mg intramuscular injection single dose

Or Ciprofloxacin 500 mg twice a day orally for 3 days

Or Erythromycin 500 mg thrice a day orally for 7 days

Incision and drainage of bubo is preferred over needle aspiration. Sex partners should be treated if there is history of sexual contact during 10 days preceding onset of symptoms in patients.

In pregnancy, Ciprofloxacin is avoided but antimicrobials like Erythromycin and Ceftriaxone can be used for its treatment.

In HIV infected person same drugs are used, however, treatment for longer period may be required.

Genital Herpes

Genital herpes is mostly caused by Herpes Simplex Virus 2 (HSV2). However cases caused HSV1 have been reported recently.

Diagnosis: HSV infection can be diagnosed by the following investigations [1,6,8]:

1. Tzanck smear: Smear is taken from the base of a vesicle or erosion and stained with Giemsa stain which may show multinucleated giant cells. But this test is usually insensitive and may be negative in later lesions.
2. Viral culture from vesicle fluid: It is not done routinely as the viral cultures are not available in most laboratories.
3. Immunofluorescence can be done to demonstrate viral antigen but it lacks sensitivity.
4. PCR for HSV DNA is the most reliable test and also the investigation of choice for herpes encephalitis and aseptic meningitis.
5. Type specific serology is indicated in case of recurrent symptoms but with negative HSV PCR/ culture.

Treatment

The regimen recommended by CDC 2015 guidelines [1,9,10] for herpes genitalis is as follows:

A. First clinical episode

Acyclovir 400 mg orally thrice daily for 7-10 days

Or Acyclovir 200 mg 5 times a day for 7-10 days

Or Valacyclovir 1g twice daily orally for 7-10 days

Or Famcyclovir 250 mg thrice daily orally for 7-10 days

B. Episodic therapy for recurrent genital herpes

Acyclovir 400 mg thrice daily orally for 5 days
Or Acyclovir 800 mg twice daily orally for 5 days
Or Acyclovir 800 mg thrice daily for 2 days
Or Valacyclovir 500 mg twice daily orally for 3 days
Or Valacyclovir 1g once daily for 5 days
Or Famcyclovir 125 mg twice daily for 5 days
Or Famcyclovir 1g twice daily for 1 day

C. Suppressive therapy for recurrent genital herpes

Acyclovir 400 mg twice daily
Or Valacyclovir 1g once daily
Or Famcyclovir 250 mg twice daily

D. In severe disease/ disseminated disease/ Central nervous system(CNS) complications

Acyclovir 5-10 mg/kg intravenous 8 hourly for 2-7 days followed by oral antiviral to complete at least 10 days of total therapy (21 days of I/V therapy in HSV encephalitis).

E. In persons with HIV

	Episodic treatment	Suppressive therapy
Acyclovir	400 mg thrice daily orally for 5-10 days	400-800 mg 2-3 times daily
Or Valacyclovir	1g twice daily for 5-10 days	500 mg twice daily
Or Famcyclovir	500 mg twice daily for 5-10 days	500 mg twice daily

F. Suppressive therapy in pregnant women with recurrent genital herpes

Antivirals should be started at 36 weeks gestation for prevention of neonatal herpes
Acyclovir 400 mg thrice daily orally
Or Valacyclovir 500 mg twice daily orally

G. Neonatal Herpes [1,11,12]

1.**Scenario 1 :** When mother develops primary genital herpes at the time of delivery

↓

Maximum chances of transmission from mother to child (50%) ⟶ severe and fatal neonatal herpes

↓

Caesarean section done and I/V Acyclovir to child is given

2. **Scenario 2 :** When mother develops primary genital herpes in third trimester ⟶ Foetal growth retardation and premature birth

↓

Treatment of mother with oral Acyclovir

3. **Scenario 3 :** If mother has history of genital herpes but no active infection during pregnancy ⟶ monitor the baby and test for HSV.

↓

Treatment of neonatal herpes: intravenous Acyclovir 60 mg / day in 3 divided doses for 2-3 weeks followed by oral Acyclovir for 6 months.

Syphilis

Syphilis is caused by spirochaetal bacterium Treponema pallidum.

Diagnosis: Following investigations can be done for diagnosis of syphilis [1,2,5,13,14,15]:
Presumptive diagnosis is made by:

NON TREPONEMAL TESTS	TREPONEMAL TESTS
Titres correlated with disease activity and used to follow up treatment response. 4-fold change in titre is significant	Once positive remains positive throughout life
VDRL (Venereal disease research laboratory) RPR (Rapid plasma reagin)	FTA-Abs (Fluorescent treponemal antibody absorbed test) TPPA (Treponema pallidum passive particle agglutination assay) EIA (Enzyme immunoassay) TPHAI (Treponema pallidum haemaglutination assay)

Definite diagnosis is made by:

1. Dark field examination
2. PCR for treponemal DNA

Screening is performed by either EIA or combined VDRL/ TPHA. Positive results are confirmed by treponemal test of different type. It is essential to confirm presumptive serological diagnosis of syphilis on second specimen.

Diagnosis of neurosyphilis is made by a combination of abnormal cerebro spinal fluid (CSF) cell count/ protein, reactive CSF VDRL (highly specific but insensitive), reactive serologic test in the presence of neurological signs and symptoms.

Treatment [1,2,5,13,15]

A. First line

1) Early Syphilis (Primary, secondary, early latent)
   Benzathine penicillin G 2.4 mega units intramuscular (I/M) injection single dose
   Or Procaine penicillin G 0.6 mega units I/M once daily for 10 days
2) Late latent and cardiovascular syphilis
   Benzathine penicillin G 2.4 mega units I/M weekly for 3 weeks (days 1, 8, 15)
   Or Procaine penicillin G 0.6 mega units I/M daily for 17 days
3) Neurosyphilis
   Procaine penicillin 2 g I/M daily + Probnecid 500 mg four times a day for 17 days
   Or Benzyl penicillin 18-24 mega units daily, given as 3-4 mega units I/V every 4 hrs for 17 days

B. Second line

1) Early syphilis
   Doxycycline 100 mg twice daily orally for 14 days
   Or Erythromycin 500 mg four times a day for 14 days
   Or Azithromycin 500 mg once daily for 10 days
   Or Ceftriaxone 500 mg I/M inj. daily for 14 days (if no allergy to Penicillin)
2) Late latent and cardiovascular syphilis, neurosyphilis

Doxycycline 200 mg twice daily for 28 days (if allergic to Penicillin)

Or Amoxicillin 2 g thrice daily + Probnecid 500 mg QID for 28 days

First line in pregnancy: Procaine penicillin G

Follow up: Two years follow up is advised in latent or tertiary syphilis. Quantitative non treponemal test is repeated at 3 months, 6 months and each 6 months thereafter. Follow up for life is advised for cardio/ neurosyphilis.

Lymphogranuloma Venereum (LGV)

LGV is caused by one of the three serovars (L1, L2, L3) of Chlamydia trachomatis. It is clinically characterized by tender inguinal and /or femoral lymphadenopathy- usually unilateral, with or without genital ulcer/ papule. Proctocolitis is a primary manifestation in those engaged in anal intercourse. Outbreaks of proctocolitis have been reported in men having sex with men (MSM).

Diagnosis: Keeping in mind the clinical picture of patient and epidemiological information in the area, diagnosis is usually made by excluding all other differential diagnosis.

Genital lesions/ rectal specimens/ lymph node aspirate can be tested for Chlamydia trachomatis by culture/ direct immunofluorescence/ nucleic acid amplification test. PCR based genotyping can differentiate between LGV and Non- LGV Chlamydia trachomatis in rectal specimen. Complement fixation test more than or equal to 1:64 and microimmunofluorescence more than or equal to 1:256 support diagnosis [1,16,17].

Treatment [1,16,17]

Incision and drainage of bubo/ aspiration AND

Doxycycline 100 mg orally twice daily for 21 days

Or Erythromycin 500 mg four times a day for 21 days

Or Azithromycin 1g orally once a week for 21 days

Sex partners who have had contact within 60 days before onset of patient's symptoms should be examined and tested for urethral/ cervical/ rectal chlamydial infection. Presumptive treatment with Azithromycin 1 g orally single dose should be given.

Drug of choice in pregnancy is Erythromycin.

Granuloma Inguinale

It is genital ulcerative condition caused by Klebsiella granulomatis characterized by subcutaneous granulomas (pseudo-bubo) and absence of lymphadenopathy.

Diagnosis: Diagnosis is made by demonstration of dark staining 'Donovan bodies' on tissue crush preparation or biopsy. 'Donovan bodies' are found in large mononuclear cells of monocyte/ macrophage lineage, whose cytoplasm contains numerous organism 0.5-0.7 X 1-1.5 micrometer in size, that show bipolar staining (safety pin appearance). Successful culture of causative organism has been reported in human peripheral blood monocytes and Hep2 cells [1,18,19].

Treatment [1,18,19]

Azithromycin 1g orally once a week or 500 mg daily

Or Doxycycline 100mg twice daily

Or Ciprofloxacin 750 mg twice daily

Or Erythromycin 500 QID

Or Cotrimoxazole 960 mg twice daily

For atleast 6 weeks and until all lesions completely heal

Add Gentamycin 1mg/kg I/V 8 hourly if no response is seen within first few days of treatment.
Treat sex partners who have had contact within 60 days before onset of symptoms in patients.
Erythromycin or Azithromycin can be given to treat granuloma inguinale in pregnancy and lactation

Gonorrhoea

Gonorrhea is caused by Neisseria gonorrheae. It results in a number of clinical syndromes including urethritis, cervicitis, epididymoorchitis, pelvic inflammatory disease, disseminated gonococcal infection and ophthalmia neonatorum.

Investigations: [20, 21]

1. Presumptive diagnosis by demonstration of Gram negative intracellular diplococci within phagocytes in stained smears from anogenital sites. Sensitivity is 90-95 % in males with urethral discharge.

2. Culture is the gold standard for diagnosing gonorrhea which is 100 % specific.

3. Nucleic acid amplification test (NAAT) is more sensitive than culture.

Treatment [22,23]

First line	Ceftriaxone 500 mg intramuscular injection + Azithromycin 2g orally stat dose
Second line	Ceftriaxone 500 mg I/M injection Or Spectinomycin 2 g I/M inj + Azithromycin 2 g stat orally Or Cefixime 400 mg orally stat + Azithromycin 2g orally stat
Third line	Ciprofloxacin 500 mg orally + Azithromycin 2 g stat orally
Gonococcal epididymoorchitis	Ceftriaxone 500mg I/M + Azithromycin 2 g orally stat followed by Doxycycline 100mg twice daily for 10-14 days
Pelvic inflammatory disease	Ceftriaxone 500mg I/M + Azithromycin 2 g orally stat followed by Doxycycline 100mg twice daily for 10-14 days + Metronidazole 400 mg twice daily for 10-14 days
Gonococcal conjunctivitis	Azithromycin 2 g orally stat + Ceftriaxone 500 mg I/M once daily for 3 days

Genital Chlamydia Infection

Genital Chlamydia infection is caused by Chlamydia trachomatis and is characterized by inflammation of genital and rectal mucous membrane; conjunctiva often asymptomatic.

Investigations: Nucleic acid amplification test is now the only recommended diagnostic test for Chlamydia. Genotyping will differentiate between LGV and non LGV infections. A first void urine is the sample of choice in men and in females, a self-taken vaginal swab or endocervical swab is also acceptable [21].

Treatment [1, 5]

First line	Azithromycin 1 g orally stat (including in pregnancy)
Second line	Doxycycline 100 mg twice daily for 7 days
Third line	Ofloxacin 200-300 mg twice daily for 7 days Or Amoxicillin 500 mg QID for 7 days (in pregnancy only)
Chlamydial PID	Ceftriaxone 250 mg I/M injection single dose + Doxycycline 100 mg twice daily for 14 days + Metronidazole 400 mg twice daily for 14 days
Epididymoorchitis	Ceftriaxone 500 mg I/M single dose + Doxycycline 100 mg twice daily for 14 days
Chlamydia associated with reactive arthritis	Rest and Non-Steroidal Anti Inflammatory Drugs (NSAID)

Conclusion

Effective prevention and treatment of sexually transmitted diseases can be achieved using a combination of responses constituting the 'public health package'. The essential components of this package are promotion of safe sex behavior, condom distribution program, promotion of health care seeking behavior, specific services to population at risk such as female and male sex workers, comprehensive case management of sexually transmitted infections and early detection of symptomatic and asymptomatic infections. For comprehensive case management, it is essential that an early diagnosis is made through laboratory tests or syndromic appraoach. Patients should be informed the importance of taking full course of treatment. Counseling should be made available for cases where it is needed. Partner notification and treatment are essential elements of any STI control programme. These actions should be carried out with sensitivity, taking social and cultural factors into account, in order to avoid ethical problems.

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If you have scintillating ideas in line with the goals and objectives of IISB, Please do share with us at **sexualityinfo@gmail.com** *or write to us at* **Indian Institute of Sexology Bhubaneswar,** *Sanjita Maternity Care & Hospital, Plot No-1, Ekamra Marg, Unit-6, Bhubaneswar-751001, Odisha, India.*

Sexually Transmitted Infections in Children and Adolescents

Dr. T.V. Ram Kumar

Abstract

Sexually transmitted infections (STI) or venereal diseases are a group of infections that are transmitted due to sexual contacts. These occur in children and adolescents mostly as result of sexual assaults or abuses. Increasing number of cases are also seen in the sexually experienced older children. These infections can be asymptomatic or can have a specific symptom complex. Few of these conditions can present with common symptoms like pain or discharge. Prompt recognition of these conditions have good prognosis. Human Immunodeficiency Virus (HIV) infection also has similar mode of transmission as other STIs and there is a role of post-exposure prophylaxis to eliminate the infection. A good psychosocial support and privacy to treatment is required to maintain productive social life.

Introduction

Sexually transmitted infections are usually seen in children who are victims of sexual abuse and in adolescents who have multiple sex partners [1]. Several of these infections may present with a common symptom complex or a single infection with different presentations. Prompt recognition and treatment of these infections result in effective cure and control of transmission of these diseases.

Epidemiology

Risk of acquiring STI follows oral, vaginal and anal sexual activity. Most of the cases

occur in Indian context as a result of sexual abuse and assault. The prevalence varies widely depending on the residential area of population. The prevalence is much higher in slums where migrant workers and transgender live and low socioeconomic conditions prevail [2,3]. The risk increases with increase in number of sexual partners and practice of unprotected sex. The young girls are victims due to the blind belief that cure of STIs is possible on having intercourse with virgin girls. These cases are usually under reported either due to social stigma or due to threats from assailants. Many of these children do not even understand the nature of crime. The prevalence of STIs worldwide varies from 0.8% to 16% [3,4]. Hence it is very vital to teach parents, teachers, and social workers regarding the recognition of these crimes. In the recent period, sexual activity among older children and adolescents have increased. They are vulnerable due to their limited abstract thinking and belief of invulnerability and uniqueness. Adolescents particularly girls are biologically vulnerable to acquire STI due to cervical ectopy, and smaller introitus. The adolescents indulge in unprotected sex due to less access to barrier contraceptives. In the United States, 50% of STIs are seen in age group of 15-24 yrs [5]. The common agents of infection include fungal (Candida), bacterial (chlamydia, gonorrhoea, and syphilis), parasitic (trichomoniasis), and viral (Herpes Simplex Virus (HSV), Human Immunodeficiency Virus (HIV), Hepatitis, and Human Pappiloma Virus (HPV). In an Indian study conducted at GTB Hospital, New Delhi, there were 58 (16%) cases of STD under 14 yrs out of total 362 patients found in 18 months study period. Two-third of them were males. All of them belonged to low socio-economic strata and were slum dwellers around Delhi-Uttar Pradesh border. All of them had contact with prostitutes and infections they acquire were syphilis, gonorrhoea, and chancroid [3].

Clinical features

The clinical features are classified according to the site and nature of lesion.

1) **Urethritis:** There is inflammation of urethra that presents with dysuria, burning micturition, itching, and meatal discharge. In males, 30% to 50% can be asymptomatic, where diagnosis is made by clinical signs alone. Pus is discharged from the meatus spontaneously or by gentle pressure. Most common causes are Chlamydia and N. gonorrhoeae [6,7]. Uncommon causes include T. vaginalis, HSV1 & 2, and Epstein Barr Virus (EBV).

2) **Epididymitis:** This condition results from the inflammation of epididymis and presents with ipsilateral scrotal swelling and pain. There is tender palpable epididymis, associated hydrocele, and history of urethral discharge [6,7]. The common causative pathogens are Chlamydia trachomatis and N. gonorrhoeae.

3) **Vaginitis:** There is inflammation of superficial vaginal mucosa, with or without extension to vulval region. The presentation varies with the pathogen. Bacterial vaginosis is caused by Gardnerella vaginalis, Ureaplasma, Mycoplasma, and anaerobic bacteria. Pathogenic bacteria replaces peroxide producing commensals. This condition has also been seen with lesbians. Trichomonas vaginalis, a protozoon produces symptoms of vulvar redness, pruritus, and foul smelling

greenish discharge. Candida albicans produces similar picture with vulval irritation, pruritus, but has characteristic thick curdy vaginal discharge. In severe cases, there is fissures and excoriations. These infections occur in isolation or in combinations [8,9].

4) **Cervicitis:** The inflammation of cervical wall (endocervix) may be asymptomatic or may present with irregular bleeding. There is characteristic endocervical mucopurulent discharge (swab sign) and/or endocervical bleeding due to friability. The common pathogens are C. trachomatis and N. gonorrhoeae.

5) **Pelvic Inflammatory Disease (PID):** PID is a severe form of disease involving upper genital tract. The common pathogens are C. trachomatis and N. gonorrhoeae. They can also result from infections due to G. vaginalis, Haemophilus influenza, anaerobes, Mycoplasma, and cytomegalo virus (CMV). It involves endometrium (endometritis), fallopian tubes (salpingitis), tubes and ovary (tubo-ovarian mass or abscess), or localized/diffuse peritonitis which has adverse long term outcomes like infertility and extrauterine pregnancy. The condition may be asymptomatic during acute stage, and may be recognized later due to fertility issues. The diagnosis in acute stage is made if any of the following signs are present: cervical tenderness on movement, uterine tenderness or adnexal tenderness on internal examination. The extent of involvement can be evaluated by Ultrasound (USG), contrast enhanced computed tomography (CECT), or magnetic resonance imaging (MRI) or laparoscopy. Early diagnosis and treatment always has better outcomes.

6) **External Genital lesions:** They present as warts caused by HPV (low risk types 6 and 11, or high risk types 16 and 18). Few other lesions include Condylomalata (syphilis) and Molluscum conntagiosum. Ectoparasites like lice and scabies can also be transmitted due to intimate physical contact [10].

7) **Genital ulcers:** The causative pathogens are HSV (genital herpes), Treponema pallidum (chancre), Hemophilus ducreyi (chancroid). Ulcer occurs over penis or vulva, but it can also occur in oral mucosa and rectal mucosa due to unusual sexual practices.

Genital Herpes is most commonly caused by HSV2, and less commonly by HSV1. They are usually recurrent. HSV1 cases are on rise in men having sex with men (MSM). There are many asymptomatic cases that transmit to others. The lesion starts as a vesicle, which ruptures to a painful, shallow ulcer. There are constitutional symptoms with inguinal adenopathy. The recurrent lesions are less severe, and there is long term subclinical shedding [11]. Chancre is characteristic of primary syphilis. The lesion is solitary and painless. Adenopathy is occasional and less severe. Chancroid presents as painful, multiple unindurated and undermined ulcers with a purulent base. There is unilateral or bilateral painful adenopathy. In severe cases, there is inguinal bubo formation, which can rupture. Lymphogranuloma venerum (LGV) transmitted by L1-L3 serovars is seen in cases of MSM [12].

The other organisms that are transmitted include

HIV, Hepatitis B virus (HBV), CMV, and many gastrointestinal pathogens that are transmitted due to adolescent sexual practices.

Diagnosis

As per Centers for Disease Control and Prevention (CDC), there are recommendations for routine screening in sexually active adolescent females and males. They are screened for C. trachomatis, N. gonorrhoeae, syphilis, HIV, HBV, and Hepatitis C virus (HCV). The key for successful screening is a thorough sexual history taking to identify adolescents who need to be further tested for STI [13]. The discussions should be private, and should be individualized to avoid social stigma. Similarly the victims of abuse and sexual assault should receive utmost care and social support during screening and examination.

The essential tests include Gram staining of secretions and nucleic acid amplification test (NAAT) of urine/urethral/cervical/vaginal/anal/oral secretions to detect C. trachomatis and N. gonorrhoeae. Presence of Gram-negative intracellular diplococci in specimen suggests N. gonorrhoeae infection. In adolescent females with vaginitis, the vaginal discharge specimen is subjected to routine pH test (>4.5 is suggestive of bacterial vaginosis or trichomoniasis) and microcopy studies with dilution in normal saline or 10% Potassium hydroxide (KOH). The saline samples are used to find motile or dead T. vaginalis or clue cells (clue cells are epithelial cells with obscured borders due to small bacteria), and KOH specimens are used for diagnosing yeast or Candida pseudohyphae. There are many recent Clinical Laboratory Improvement Amendments (CLIA) approved tests that are sensitive, more easily performed and detect multiple organisms like OSOM (Genzyme Diagnostics, Cambridge, Mass), Trichiomonas Rapid test, OSOM BV BLUE test, Affirm VPIII. The Pelvic Inflammatory Disease is diagnosed as a combination of history taking, examination, and laboratory tests. A low threshold is necessary for making the diagnosis. The patient needs to be investigated using transvaginal USG, or laparoscopy (including biopsy) to assess the extent of disease and deciding the treatment. HSV is diagnosed by Tzanck smear (less sensitive and nonspecific) and NAAT, including PCR assay (more sensitive). Syphilis is diagnosed by VDRL (Venereal Disease Research Laboratory) test or RPR (Rapid plasma reagin), treponemal EIA (enzyme linked immunosorbent assay) or CIA (enzyme or chemiluminescence immunoassay). HIV screening is highly essential at ICTC (integrated counseling and testing centers) [13].

Differential diagnosis

Similar symptoms can be seen in number of other infections/conditions. These conditions have to be ruled out for appropriate treatment. The conditions where symptoms can mimic STIs include urinary tract infection, acute appendicitis, colitis, tuberculosis (abdominal and urogenital) tubal pregnancy, Behcet disease, physiological secretions.

Treatment

The adequacy and completeness of treatment requires easy accessibility and privacy. Complete treatment includes the treatment of the individual and all the sexual contacts within last 60 days or the last contact if more than 60 days. There is delay in seeking medical help by female adolescents due to social stigma and in adults due to inability to differentiate pathological discharges form the

normal one. Appropriate treatment of the disease is essential to decrease the chances of infertility in future. The patient also needs to be tested for pregnancy. Repeat testing is required after 3 months [13]. The treatment of partner is ideal after physical assessment, however in cases where direct examination is not possible, one partner is given the prescription/medication for the other partner. This is called expedited partner therapy (EPT) or patient delivered partner therapy (PDPT) [14]. The regimens for the treatment of the STIs have been depicted in table 1. The complicated cases may require referral to higher centers. Along with medical treatment, sexual abuse or assault cases need to be given adequate social support and psychiatric counseling.

Table 1: Management of uncomplicated STI

Infection	Treatment
N. gonorrhoeae	Inj. Ceftriaxone 250mg i.m. stat + 1gm Azithromycin stat (Single Dose)
Chlamydia trachomatis	Doxycycline 100mg twice daily x 7 days Or Azithromycin 1g stat (Single Dose)
Chlamydia trachomatis (L1,2,3) LGV	Doxycycline 100mg twice daily x 21 days
Primary and secondary syphilis	Inj. Benzathine Penicillin G 2.4 million unit i.m. stat (Doxycycline 100 mg BD x 14 days if allergy to penicillin).
Late syphilis	Inj. Benzathine Penicillin G 2.4 million unit i.m. weekly for 3 weeks (Doxycycline 100 mg BD x 28 days if allergy to penicillin).
H. ducreyi	Azithromycin 1gm oral single dose or inj. Ceftriaxone 250 mg i.m. single dose
T. vaginalis	Tab. Metronidazole 2gm single dose.
Scabies	5% Permethrin or Tab. Ivermectin 200µg/kg oral 2 doses 2 weeks apart.
Pubic lice	1% Permethrin local application.Rinse after 10 min.
Herpes simplex virus	Acyclovir 400 mg TDS x 7-10 days (1st episode) Acyclovir 400 mg TDS x 5 days (recurrence)
HPV (uro-ano-genital warts)	Podofilox 0.5% (for external genitalia only) or cryotherapy or Trichloroacetic acid application (all types)

Prevention

STIs can be prevented by avoiding close sexual contacts. Prevention strategies include abstinence, single sexual partner, and effective use of barrier contraceptives. Sex education particularly to adolescents can go a long way in preventing STIs. The HPV infection can be prevented by HPV vaccination in the adolescents [15,16].

Conclusion

Estimating the true incidence/prevalence of STIs is very difficult due to the asymptomatic nature of many infections, and social stigma as that would reveal the individual sexual history and preference. On the other hand, the cases are on a rise due to poverty, migration, child labor, and illiteracy. With changes in lifestyles and independency, cases are also being reported among affluent classes with drug-addiction. This menace needs to be addressed by appropriate sex education of adolescents and periodical assessment by questionnaires to find out issues like drug addiction, depression, and child abuse. Timely and appropriate treatment can cure some of the conditions and preserve the fertility in females.

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Neurosyphilis : Current Understandings

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Abstract

Neurosyphilis is neurological complication of syphilis, a sexually transmitted disease caused by infection of Treponema pallidum. In pre-antibiotic era, it was considered almost incurable condition. After the introduction of penicillin for treatment, survival dramatically improved. Recently, upsurge is seen in neurosyphilis especially in Human Immunodeficiency Virus (HIV) infected patients and homosexual population. In current scenario, concurrent HIV and syphilis infections poses a major challenge as both conditions have similar modes of transmission and risk factors. Development of neurosyphilis is more common in HIV infected syphilis patients than non-HIV infected patients and presence of syphilis poses a negative impact on viral load (increases viral load) in HIV infected patients which further enhances the transmission of HIV.

Introduction

Neurosyphilis is neurological complication of syphilis, a sexually transmitted disease caused by infection of Treponema pallidum. Most of the neurological complications are thought to occur late after primary syphilitic infection. But, neurosyphilis can occur early as well as late in the syphilis. There are evidences which suggest that involvement of nervous system by disease process occurs early in the syphilis (within days to weeks).

In pre-antibiotic era, neurosyphilis was considered almost incurable condition. People used to think that it was sent from the God as a punishment to the mankind [1]. Before the advent

of penicillin, a number of therapies (some of them were very bizarre) were used for the management of this condition including mercury, arsenicals with bismuth, fever therapy (fever induced by malaria) and suspension therapy (suspending patients by their necks in an apparatus) [2,3]. After the introduction of penicillin, treatment and survival dramatically improved. Recently resurgence in incidence of neurosyphilis is seen particularly in HIV patients which compels us to review this condition in changing scenario.

Pathophysiology of neurosyphilis

After primary infection of Treponema pallidum, partial immunity develops which is insufficient to eradicate the bacteria from the human body. This results in persistent latent infection in some patients. There are evidences which suggest that invasion of nervous system occurs very early. In around 25% of untreated patients, the bacteria can be seen in cerebrospinal fluid (CSF) in the early syphilis [4].

After the initial invasion, course may vary in individual patients depending upon the host factors and the virulence of strain. In some patients, spontaneous resolution occurs without any inflammatory reaction. In others, transient meningitis may develop which may resolve spontaneously. In some others, persistent meningitis may develop if organism was not cleared from the CSF. These patients may have asymptomatic meningitis. It has been demonstrated that higher the abnormality seen in the CSF in asymptomatic meningitis, higher the chances of developing symptomatic neurosyphilis later.

Changing epidemiology

In pre-antibiotic era, neurological complications of syphilis were very common and used to be seen in about one third of patients. At that time, one third used to have asymptomatic neurosyphilis and another one third used to have tabes dorsalis [5]. Around 10% used to have general paresis and in about the same proportion, meningovascular syphilis was seen. Other forms of neurosyphilis were less common and was seen in remaining proportions.

In current era, due to wide use of antibiotics, late complications of syphilis including neurosyphilis are uncommon. Tabes dorsalis, once the most common form of neurosyphilis, is now rarely seen. Now-a-days, neurosyphilis is seen mostly in homosexual men, most of them are also having concurrent human immunodeficiency virus (HIV) infection [6]. It has also been shown that HIV patients with lower CD4 lymphocyte counts are more likely to develop symptomatic neurosyphilis.

Clinical presentations of neurosyphilis

Neurosyphilis can affect the meninges, parenchyma of brain and spinal cord and vessels. On the basis of duration between neurological presentation following the primary infection, neurosyphilis can be categorized as early and late neurosyphilis. Early complications include asymptomatic meningitis, symptomatic meningitis and meningovascular syphilis. Late neurosyphilis includes general paresis of insane and tabes dorsalis. Ocular syphilis (posterior uveitis and panuvieitis) and otitic syphilis (hearing loss with or without tinnitus) can occur early as well as late.

Asymptomatic meningitis: Patient does not have any symptom or sign suggestive of neurological involvement but CSF examination is abnormal. It occurs within weeks to months after the primary

infection. It is rare after two years of initial infection. Sometimes patient may have symptoms and signs suggestive of simultaneous primary or secondary syphilis. The diagnosis is primarily based on abnormal CSF findings which include CSF lymphocytes> 5 cells/microlitre, CSF protein >45 mg/dl and reactive CSF-VDRL (Veneral Disease Research Laboratory) in different combinations. Most of these patients have milder abnormalities i.e. CSF-cells<100 cells/microlitre, protein <100 mg/dl. In HIV negative patients if asymptomatic meningitis is clinically suspected, abnormal CSF findings are considered consistent with the diagnosis even if CSF-VDRL is non-reactive. In HIV positive patients, if CSF-VDRL is non reactive, the diagnosis of asymptomatic meningitis is difficult to substantiate because mild CSF abnormality can also occur due to HIV infection itself.

Symptomatic meningitis: It usually occurs within a year of initial infection but can also occur later. Patient usually presents with headache, nausea, vomiting, confusion and neck stiffness. Fever is uncommon. Cranial nerves involvement is quite common. Common cranial nerves affected are 7th, 8th, 6th and 2nd cranial nerves. Focal meningeal inflammation may turn into diffuse meningitis or it may form syphilitic gummas (focal inflammatory mass lesions adjoining lepto-meninges). Sometimes meningitis may resolve spontaneously. Most of the times, these untreated meningitis patients develop more severe forms of neurosyphilis later. Syphilitic meningitis sometimes may also involve spinal cord and lead to meningomyelitis and present with back pain, weakness, sensory loss and incontinence. In symptomatic meningitis, CSF abnormality is more severe in comparison to asymptomatic meningitis. In these patients, CSF-VDRL is almost always reactive. CSF-cells are in range of 200-400 cells/microl and protein is found in range of 100-200 mg/dl. Cranial or spinal Magnetic Resonance Imaging (MRI) usually shows enhancement of meninges. Cerebral gummas are enhancing lesions contiguous to meninges with associated surrounding oedema [7].

Meningovascular syphilis: Syphilitic meningitis can cause infectious arteritis of any vessel surrounding the brain or spinal cord which may lead to thrombosis and infarction. This can present as an ischemic stroke, especially in young people. Stroke may develop at any time from the initial few months to few years after the primary infection. In the pre-antibiotic era, the mean duration between primary infection and stroke was seven years [5]. Middle cerebral artery is most commonly involved. Rarely, anterior spinal artery may also get involved and patient may develop spinal cord infarction. Some patients develop headache, dizziness, change in behaviour (due to concurrent meningitis) prior to the onset of ischemic stroke. CSF abnormality found in meningovascular syphilis is less severe in comparison to acute meningitis. CSF-cells range from 10-100 cells/microlitre and protein ranges from 100-200 mg/dl. CSF-VDRL is usually reactive but not necessarily in all cases. Vascular abnormalities in form of focal segmental narrowing, focal narrowing and dilatation, or complete occlusion can be visualized on CT/MR/digital subtraction angiography. The findings are non-specific and can be seen in any infectious or non-infectious vasculitis.

General paresis of insane: It is a form of tertiary syphilis and usually occurs 10-25 years after the primary infection but can also occur early occasionally. It is also known as paretic neurosyphilis or dementia paralytica. In pre-antibiotic era, it usually led to death within few years with a mean of 2.5 years. Initially, these patients develop forgetfulness and personality change. Gradually as disease progresses, the severity of symptoms increases and they develop severe dementia. Occasionally patients also develop predominant psychiatric symptoms in form of depression, psychosis or mania. Neurological examination reveals dysarthria, tone abnormality and reflex abnormality. Argyll-Robertson pupil may also be seen. Pupillary abnormality is more consistent with tabes dorsalis. CSF is always abnormal in this condition [8].

Tabes dorsalis: In pre-antibiotic era, this was the most common presentation of neurosyphilis which is now very rare. It usually occurs after 20 years of primary infection but can also occur as early as after three years of primary infection. In this, posterior column of spinal cord and dorsal roots are affected. Clinically patients present with sensory ataxia and lancinating pains. Sensory ataxia causes difficulty in walking especially when eyes are closed. It may lead to frequent falls especially in the dark. The pain occurs in the form of sudden, severe episodes of stabbing pain. It may affect limbs or back and may last for minutes to days. Sometimes patient may develop recurrent attacks of epigastric pain, nausea and vomiting. Bladder dysfunction in the form of urinary retention or overflow incontinence can occur early in the course. Other important clinical features include pupillary irregularities, absent lower limb reflexes, impaired vibratory and joint position sense in feet, optic atrophy. One very important pupillary sign seen in tabes dorsalis, is the Argyll Robertson pupil which is observed in around half of the patients. Argyll Robertson pupil is characterized by small sized pupil which does not respond to light but contracts normally to accommodation and convergence. It also does not dilate in response to painful stimuli and dilates poorly to mydriatics. In tabes dorsalis, CSF examination may be entirely normal or it may show mild lymphocytic pleocytosis (10-50 cells/microl) and mildly raised protein (45-75 mg/dl). In around one fourth of patients, CSFVDRL test may be nonreactive.

Atypical forms of neurosyphilis: Some authors proposed the entity of 'atypical neurosyphilis' for those patients who do not fulfill the clinical criteria for one of the classically described forms neurosyhilis i.e. symptomatic meningitis, meningovascular syphilis, general paresis, and tabes dorsalis. They hypothesized that widespread use of antibiotics for unrelated infection in an undiagnosed syphilis patient may lead to incomplete treatment which further may produce atypical forms or forme fruste of typical syndromes. They reported milder forms and mono-symptomatic clinical presentations e.g. reflex abnormality, sensory abnormality, seizure or pupillary abnormality [9]. There is another school of thought which says that such milder forms were always existed [5] and their proportion has not increased in recent reports.

HIV and neurosyphilis: There are evidences that suggest that HIV infection modulates the clinical presentation of syphilis in form of greater organ involvement, atypical and florid skin rashes.

It may also lead to more rapid progression to neurosyphilis [10]. Status of HIV infection may also affect the results of serologic tests for syphilis. Apart from that, there are also evidences which suggest that simultaneous syphilis infection may lead to increased HIV viral load. The risk factors for developing neurosyphilis in HIV infected patients include CD4 count of <350 cells/microl, RPR (rapid plasma reagin) titer >1:128, and male gender [11].

Diagnosis of Neurosyphilis

Diagnosis of neurosyphilis is established using CSF examination findings and clinical criteria. Cell count (WBCs either polymorphs and/or lymphocytes) of >5/ml, proteins >0.45g/l in CSF or IgG index of >0.6 are indicators of the disease. The findings are nonspecific and have a low sensitivity. These parameters should be carefully interpreted in patients with HIV as the rise in cell count and proteins may be present without the disease.

A single test cannot be used to confirm the diagnosis. Ruling in the diagnosis, relies upon the detection of intrathecal antibodies which can either come via blood brain barrier through circulation or may be produced from plasma cells intrathecally. There are two types of test which can be used for diagnosing neurosyphilis. The non-treponemal tests detect the antiphospholipid antibodies which can be nonspecific while treponemal tests detect the anti-treponemal antibodies. Non-treponemal tests include venereal disease research laboratory (VDRL) and rapid plasma reagin (RPR). Treponemal tests include fluorescent treponemal antibody absorption (FTAABS), treponema pallidum particle agglutination assay (TPPA) and syphilis enzyme immunoassays (EIAs).

Neurosyphilis is confirmed when serum treponemal tests are reactive along with CSF-VDRL [12]. In neurosyphilis especially in tabes dorsalis, the nontreponemal tests may be nonreactive. If there is clinical suspicion of late neurosyphilis, serum treponemal tests i.e. FTA-ABS, TPPA, or syphilis EIA should always be conducted. In patients with syphilis, these tests usually remain reactive, irrespective of previous treatment. If these tests are reactive, it suggests that the patient had syphilis any point of time in his or her life and there is a risk of neurosyphilis in these patients. The diagnostic criteria of neurosyphilis are as follows:

Definite neurosyphilis

1. Positive blood treponemal serology and
2. Positive CSF VDRL

Probable neurosyphilis

1. CSF mononuclear pleocytosis,
2. Neurological signs and symptoms compatible with neurosyphilis,
3. Positive blood treponemal serology and
4. Negative CSF VDRL

Possible neurosyphilis

1. CSF mononuclear pleocytosis,
2. Absent neurological signs and symptoms compatible with neurosyphilis,
3. Positive blood treponemal serology and
4. Negative CSF VDRL

Treatment of neurosyphilis

Centers for Disease Control and Prevention (CDC) has provided guidelines for the treatment of neurosyphilis [13].

1. Aqueous crystalline penicillin G, 18 to 24 million units per day, administered as 3 to 4 million

units intravenous (I/V) every four hours, or 24 million units daily as a continuous infusion for 10 to 14 days, or Procaine penicillin G, 2.4 million units intramuscular (IM) once daily plus probenecid 500 mg orally four times a day, both for 10 to 14 days.

2. An alternative treatment for patients who have a mild penicillin allergy is ceftriaxone 2 g IV or IM daily for 10 to 14 days, with careful observation for crossreactivity [14].

High dose doxycycline 200 mg orally twice a day for 21 to 28 days may also be used as an alternative (still not recommended by the CDC or European guidelines) option [15].

Conclusion

After the introduction of penicillin, there is marked reduction in neurosyphilis. Recently, upsurge is seen in neurosyphilis especially in HIV infected patients and homosexual population [16,17]. In current scenario, concurrent HIV and syphilis infections poses a major challenge as both conditions have similar modes of transmission and risk factors [18]. Apart from that, infection with one condition may enhance the transmission of the other [19,20]. It is very important to keep the possibility of neurosyphilis in patients with HIV and/or homosexual behaviour presenting with neurological problems. Apart from this, now a days, short course antibiotic use is common for various infective indications. This may lead to incomplete treatment in an undiagnosed syphilis patient which may lead to milder atypical forms or forme fruste of typical syndromes. This further complicates the issue and demands high clinical suspicion in relevant clinical scenario.

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Sexually Transmitted Disease and Mental Illnesses : Understandings and Implications

Ms. Deblina Roy | Dr. Sujit Kumar Kar

Abstract

Both sexually transmitted diseases (STDs) and mental illnesses are important public health concerns. Both mental illnesses and STDs have high burden of care and they produce significant impairment in life. When these entities exist together, morbidity and consequently the cost of care multiply several times. Mental illness increases the risk of STD. Patients with STDs also have higher risks to develop mental illnesses. Considering the public health significance, it is important to understand the association of STDs and mental illness, so that appropriate preventive as well as remedial measures can be taken.

Introduction

Sexually transmitted diseases (STDs) are one of the major public health concerns worldwide. Having a mental illness, may pose risk to develop STDs in an individual. Studies have reported that the risk for the sexually transmitted diseases are 10-20 fold higher in the psychiatric patients, compared to the general population and the factors that have been found responsible for that are, impaired autonomy, increased impulsivity, increased susceptibility to persuaded or threatened sexual activity, poor living conditions, medical and environmental conditions [1]. The major factor for the increased sexually transmitted infections (STI) was found to be the prominent psychiatric conditions which impair the person's decision making and thought process. Failure of the standard STI prevention interventions in such vulnerable population demands the need for the newer and innovative methods for the prevention of STI [1].

A study from Brazil, revealed that nearly one fourth of patients with mental illness have lifetime history of STDs [2]. Similarly a study from United States revealed that the prevalence of HIV, Hepatitis B and C virus infection in patients with severe mental illnesses are several folds higher than their prevalence in general population [3]. Evidences suggest that women having sex with women (WSW) attending STD clinics, had disproportionately higher incidences of mental health issues (anxiety, depression, suicidal behavior) including substance use disorders [4].

A large scale study with a sample size of 289604, was conducted among the privately insured clients of America who used mental health facilities to find out the prevalence of sexually transmitted infections. The results showed that among the mentally ill females there was 3% chance of incurring STIs and in case of male the chance for being diagnosed with STI was about 1.2% [5]. The study recommended that among the united states privately insure population the strategies like screening for mental illness and STIs should be adopted to reduce the cost of health care [5].

The relationship between sexually transmitted diseases (STDs) and mental illness is bidirectional. Presence of STDs increases the risk of mental illness and vice versa. There may be exceptions to this relationship. For example, victims of sexual abuse are at risk of acquiring sexual transmitted diseases and psychological difficulties. Here, both the effects (STD and mental illness) are related more due to sexual abuse. Kawsar et al., in their study found the prevalence of sexually transmitted infections (STIs) in children and adolescents with sexual abuse to be 26% and psychological issues in this population to be 81% [6]. Mood changes, attempts of self-harm and sleep disturbances were the common issues in this population [6].

STDs in patients with Mental Illness

Sexuality is a very important aspect of any human being whether ill or healthy, but the sexual practices among the patients with mental illnesses, have been studied quite less. Research shows that they have negative self-esteem, low confidence level and they are also unhappy with their sexual life [7].

There are various factors that make the patients with mental illness vulnerable to acquire STDs. Patients with severe mental illnesses and those in intoxicated state with substance often have lack of judgement, which make them vulnerable to indulge in unsafe sexual practices and acquire STDs [8]. When severe mental illness and illicit substance use co-exist, high risk sexual behavior increases, further making the individual more vulnerable for STDs [9]. Evidences suggest that young individuals with schizophrenia spectrum disorders, mania, substance use disorder and antisocial personality carry higher risk to indulge in risky sexual practice and are at higher risk of acquiring STDs [10]. Even patients with depression can indulge in high risk sexual activities, which counters the myth that the depressed patients have no sexual desire at all [11].

The lack of insight and lack of self-concern in the patients with the major psychiatric illnesses also makes them more vulnerable for STI and decreases their chances of the adherence to the treatment leading to complications. It has also been observed in the studies that the people affected with STIs often first show affective symptoms, most commonly depression and diagnosis of STI follows [12]. Substance use has

been very strongly linked with the high risk sexual behaviour and studies also show that the use of alcohol and other stimulants have increased high risk sexual behaviour and consequently higher incidences of sexually transmitted diseases among heterosexuals [13]. Hypersexual behavior, novelty seeking behavior and poor impulse control in various psychiatric disorders lead to indulgence in unsafe sexual practice and development of STDs. The figure 1 below describes the various factors that attribute to development of STDs in patients with mental illness.

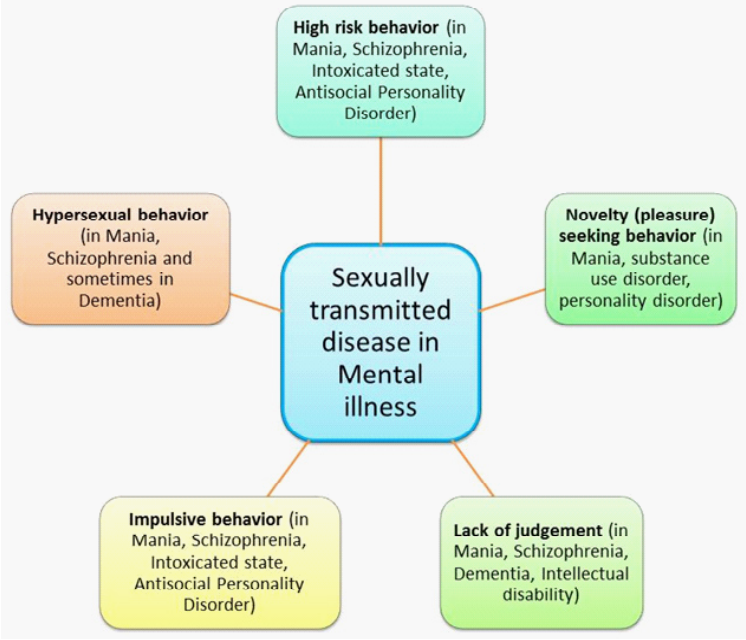

Figure 1: Explanatory model of Sexually Transmitted Disease in Mental Illness

If sexually transmitted disease is present in patients with mental illnesses, then the risk of transmission in the community increases due to their high risk sexual behavior and unsafe sexual practices.

Mental illnesses in patients with STDs

Patients suffering from STDs go through enormous shame, guilt, fear and anger. This affects their mental health adversely. These psychological reactions are secondary to acquiring STDs. Similarly, STDs may cause significant impairment and disability, which may develop mental illnesses. Stigma has a close association with STDs. Stigma causes isolation, unemployment and loss of self-repute, which may in turn cause psychological distress. A study suggests that there is high prevalence of the neurocognitive disorders in the HIV infected individuals and the highly active anti-retroviral treatment is also not that effective to stop the neuro psychiatric complications of HIV [14]. The figure 2, below explains the causes of mental illness in patients with STDs.

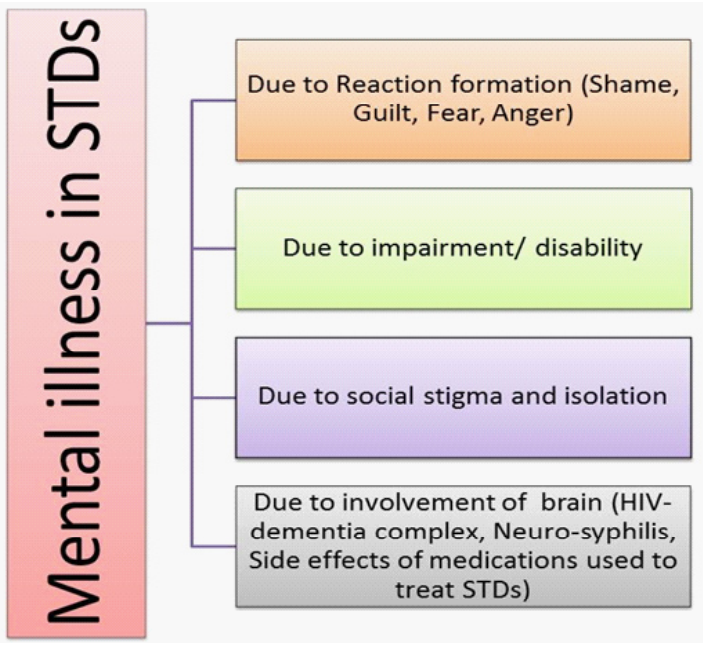

Figure 2: Explanatory model of Mental Illness in Sexually Transmitted Disease

Other than the above mentioned specific causes, the patients with STDs may also develop mental illnesses due to other risk factors like positive family history, substance use, past history of psychiatric illness, maladaptive personality and poor coping skills etc which put general population at risk also.

STD prevention strategies among the mentally ill

The best quality evidences gathered over the past few decades suggest that the strategies for the behavioural change in the mentally ill to prevent the STIs are better if the interventions are targeted towards awareness, attitude and behavior of the individual. The strategies that caused fear among the patients regarding HIV were least effective [15]. Research evidences also show that only providing education to the mentally ill people is not enough to ensure the prevention of the STI among them. There is a requirement of the behaviourally focused interventions like promotion of the barrier methods among both men and women irrespective of their serological status and training to effectively use them, and continuous reinforcement for maintenance of these behaviours. Peer interventions also have been found significantly effective in these groups [16].

Mentally ill people have been disproportionately affected by the spread of HIV. There are various factors like social stigma, clinic waiting time, no prior testing, lack of knowledge and poor attitude for the serological testing which contribute for increased susceptibility for the STI. Interventions like use of rapid HIV testing kits and education at the psychiatric setting can be an effective method for secondary prevention of the STIs [17].

Studies also suggest that the assertiveness training in the woman with the severe mental illness may help in the reduction of the HIV transmission and as well as the other sexually transmitted infections [18].

There are various types of interventions that are tried effectively in prevention of STIs in patients with mental illnesses

- Informational motivational behaviour model (IMB) model [8]. This model can be used as a conceptual framework for the construction of the preventive intervention among the severely mentally ill.

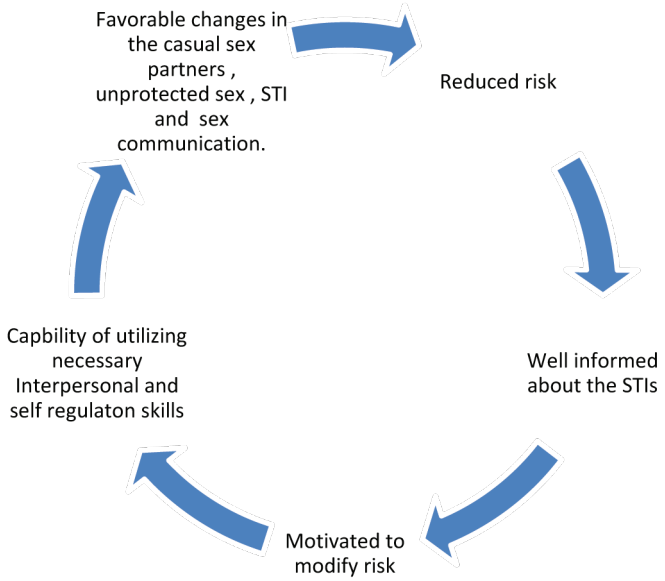

Figure 3: Informational motivational behaviour (IMB) model

- Introduction of the periodic and routine testing for STIs including HIV among the severely mentally ill, alcohol and other drug abusers. The best intervention for these groups could be long term relapse prevention maintenance strategies which could reduce the high risk behaviour among these groups of patients.
- Maintenance of the anti-psychotic therapy along with the motivational counselling for prevention of the substance abuse.
- Enhanced cognitive behavioural skill building intervention with health promotion. The essential components of this intervention are use of condoms , attitudinal changes for regarding safer sex , perceived susceptibility to HIV and behavioural skills regarding the perceived personal efficacy and objective ability to use the protective methods [19].

A systematic review of the interventions for the prevention of the STI among the severely mentally ill population suggested that the more structured and the culturally appropriate interventions may be put into the practice [20].

Abuse, Neglect and Violence with relation to STI

In people suffering with STI, a retrospective

evaluation of childhood history revealed that most people had adverse childhood experiences. The numbers of adverse childhood experiences are directly proportional to STI in adults [21]. Evidences also suggest that people with STIs are at higher risk to be abused [22]. Abuse and violence may increase the risk of mental illness in them.

A study among the low income African-American women was done regarding coerced sexual activity and it was found that the women who reported about increased coercion had abused substances like alcohol, marijuana, crack and cocaine. They perceived that persuading the partner regarding the use of condoms will lead to violence. They also reported about being subjected to violence by the domestic partners and being involved in unwanted sexual activity as their partners threatened them for forceful sexual acts. These findings suggests that women face both psychological and social issues which make them highly vulnerable for HIV and other sexually transmitted disorders [23].

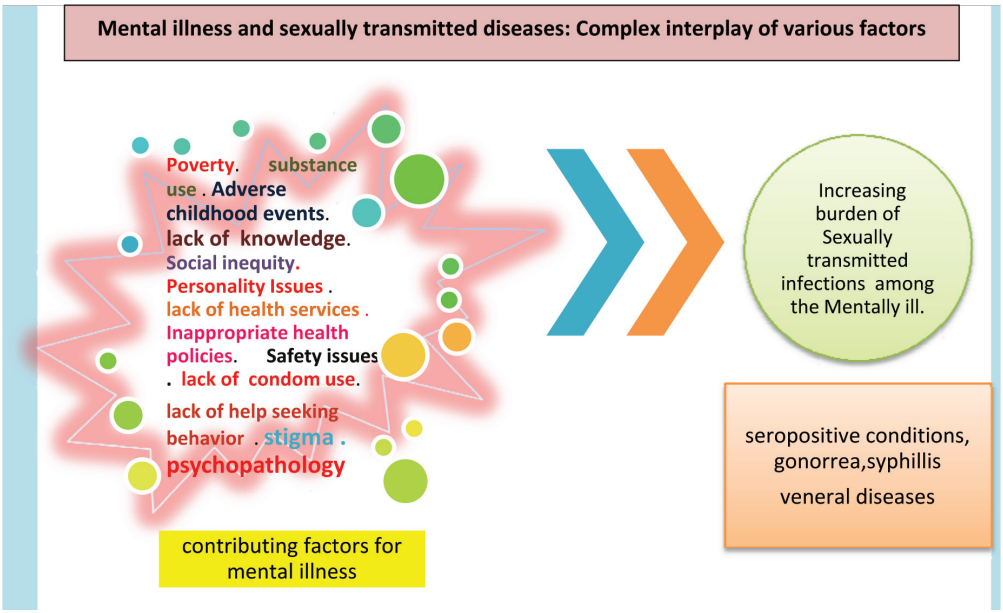

Figure 4: The factors in association with mental illness and STDs.

Pharmacological considerations : Mental Illness and Sexually Transmitted Infections

Various studies show that there are clinically significant drug to drug interactions between the antibiotics used for the treatment of STIs and the 2nd generation of the antipsychotics, which also open up chances for more research to find the best suited therapies for them. Certain antibiotics have been found to lower the plasma levels of the 2nd generation antipsychotics [24]. Macrolides and Fluoroquinolones have been found to cause prolongation of the QT intervals and increase the concentration of the potassium leading to arrhythmias when used together with the antipsychotics. Antiretroviral drugs and

second generation antipsychotic agents influence metabolism of one another through the CYP 450 enzyme system, hence the clinician need to consider appropriate medications to avoid this [14, 24].

Conclusion

Prevalence of sexually transmitted disease is higher in patients with mental illnesses and vice versa. The clinicians need to screen for sexually transmitted diseases in individuals with mental illnesses if initial evaluation of the patient gives a lead in this regards. Similarly patients with sexually transmitted diseases need to be screened for mental illnesses. A collaborative and multidisciplinary approach to these groups of patients may be more useful than the conventional approach. Identifying the risk factors of STDs in patients with mental illnesses and risk factors of mental illness in patients with STDs will help in prevention of both these disorders.

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Prevention of Sexually Transmitted Diseases

Dr. Neelam Gautam

Abstract

Sexually transmitted diseases (STDs) are global public health problems because of their health, social and economic consequences. Problems of STDs is like an iceberg, floating tip represents only a small portion of the clinical cases whereas a major portion of disease is submerged hidden where prevention can play the most important role in managing these infections.

Elimination of reservoirs, breaking the channel of transmission and protection of susceptible can prevent the transmission of STDs. Reservoirs can be eliminated by case detection and complete treatment. Cases can be detected either by screening of high risk groups, contact tracing or cluster testing. Complete treatment of cases is necessary. Susceptible can be protected by having 'safe sex' practices, prophylaxis vaccination, sexual awareness and other measures.

Introduction

Sexually Transmitted Diseases (STDs) are usually transmitted by sexual contacts and are caused by wide range of bacteria, virus, protozoa, fungi and ectoparasites. Some of the STDs are treatable while some such as HIV infection are not curable and can be fatal.

Despite various attempts by health care providers to reduce the prevalence and incidence of sexually transmitted diseases, more than 1 million people acquire an STD every day. Each year, an estimated 500 million people acquire one of the four STDs i.e. chlamydia, gonorrhea, syphilis and trichomoniasis [1]. STDs can have serious consequences beyond

the immediate impact of the infection itself. Therefore, prevention has an important role in managing these infections. Primary prevention focusing on the transmission of infection and secondary prevention focusing on minimizing the adverse health effects of infection (STDs) or usually a combination of the two is necessary [2]. The various intervention measures required for preventing the spread of STDs depend on several sociocultural factors such as age, gender, employment status, level of education, religion, culture etc. These factors can influence sexual conduct and therefore spread of the infections.

The prevention and control of STDs are based on the following five major strategies [3].

1. Accurate risk assessment and education.
2. Pre-exposure vaccination for vaccine-preventable STDs.
3. Identification of infected persons whether asymptomatic or symptomatic.
4. Effective diagnosis, treatment, counseling, and follow up of infected persons.
5. Evaluation, treatment, and counseling of sex partners of persons who are infected with an STD.

Primary prevention is to change sexual behaviors that increase the risk of contracting STDs i.e. 'practicing safe sex'. This can be achieved by following measures:

1. Health education: Health education is the first important step in reducing the number of persons who engage in risky sexual behavior. The aim of educational intervention is to help individual to alter their behavior in an effort to avoid STDs, that is, to minimize disease acquisition and transmission. Information on STD prevention should be individualized on the basis of the patient's stage of development and understanding of sexual issues. The target groups may include the general public, patients, priority groups, community leaders etc. [2].

2. Abstinence: One of the best ways to prevent transmission of STDs is to avoid casual sexual contact with other individuals (i.e., anal, vaginal or oral) which may be impractical but not impossible.

3. Mutual monogamy: Mutual monogamy (only having sex with one partner) is another way to limit exposure to sexually transmitted infections (STIs). If neither partner has ever had sexual contact of any kind with another person, there is no risk of STIs. If either person has ever had sex with anyone else, they may get tested and, if necessary, treated for STIs at the beginning of each relationship. Many STIs can be 'silent' causing no noticeable symptom. Some STIs may not be detectable through testing ranging anywhere from a few weeks to a few months.

4. Sexual health check-ups: Attending a sexual health screening before engaging in sexual contact with a partner helps to prevent new cases of infection. Before resuming sexual relations one must always check if a partner has engaged in sexual activity with someone else. This may not always be a full proof method since many infections may go undetected for certain periods of time.

5. Avoid alcohol and recreational drug use: Avoiding alcohol and recreational drug use reduces the risk of contracting an STD/STI, having an unwanted pregnancy, or being coerced to have sex. Alcohol and drug use can reduce one's ability

to make good decisions and make it less likely to actually implement the safer sex decision. It increases the vulnerability of one to be coerced into participating in an activity without being able to give full and informed consent.

6. STD/HIV Prevention Counselling : Prevention counselling is most effective if provided in a non-judgmental and empathetic manner appropriate to the patient's culture, language, gender, sexual orientation, age, and developmental level. Prevention counselling for STD/HIV should be offered to all sexually active adolescents and to all adults who are diagnosed with an STD,have had an STD in the past year, or have multiple sexual partners [3].

Personal prophylaxis

a. Contraceptives: Mechanical barrier (e.g. condoms and diaphragms) provide a barrier against the contraction of STDs from an infected individual. Male Condoms, however, need to be used correctly to prevent transmission. Used condoms must be removed and disposed of appropriately to prevent spread. These barrier methods especially when used with spermicides will minimize the risk of acquiring STD infections. However, their use is limited by lack of motivation, acceptability and convenience. The exposed parts should be washed after contact with soap and water as soon as possible [4]. It is observed that consistent use of male condom in heterosexual HIV serodiscordant relationships (i.e. one infected and one uninfected partner) decreases the chances of HIV-negative partners to be infected with HIV less likely by 80% compared with persons in similar relationships in which condoms were not used. Moreover, studies demonstrate that consistent condom use reduces the risk for other STDs, including chlamydia, gonorrhea, and trichomoniasis [5]. Female condoms like male condoms are also available but are costly compared with male condoms, however they offer the advantage of being a female-controlled STD/HIV prevention method.

b. Pre-exposure vaccination: Pre-exposure vaccination is one of the most effective methods for preventing transmission of human papillomavirus (HPV) and Hepatitis B Virus (HBV). HPV vaccination is recommended routinely for boys and girls aged 11 to12 years. All unvaccinated and uninfected persons being evaluated or treated for an STD should be immunised withHepatitis B vaccine. In addition, hepatitis B vaccines are recommended for Men having Sex with Men (MSM), Injectable-drug users (IDUs), persons with chronic liver disease, and persons living with HIV infection who have not yet been infected with hepatitis virus [3].

Identification of asymptomatically infected persons and persons with STD symptoms

Early case detection is of supreme importance. The usual methods for early detection are:

a. Screening: Screening tests are done on the apparently healthy volunteers from the general population. As STDs are not brought to notice easily in community, high priority is given to special groups- pregnant women, blood donors, industrial workers, army, police, refugees, prostitutes, convicts, restaurant and hotel staffs, truck drivers, migrants, construction site workers etc. [2].

b. Contact Tracing: Contact tracing is a technique by which the sexual partners of diagnosed patients are identified, located, investigated and treated.

This is one of the best methods of controlling the spread of infection. Patients are interviewed for their sexual contact by trained staff. The key to success in this technique is patient himself who must disclose all sex contacts voluntarily. By using telephone, telegram and other rapid means of communication contacts are sought and then persuaded to attend an STD clinic for examination and treatment [6].

c. Cluster Testing: In this technique patients are asked to name other persons of either sex who move in the same socio-sexual environment. These persons are then screened and pathological tests are done. This technique has been succeeded in finding almost double the number of cases [7].

Effective diagnosis, treatment, counseling, and follow up of infected persons

a. Case holding and treatment: Adequate treatment of patients and their contacts is the mainstay of STD control. There is a tendency on the part of patients suffering from STDs to disappear or drop out before treatment is complete. Therefore every effort should be made to ensure complete and adequate treatment [2].

b. Epidemiological treatment (contact treatment): It consists of administration of full therapeutic dose of treatment to persons recently exposed to STD while awaiting the results of laboratory tests.Its effects are not lasting unless it is combined with a venereological examination and the tracing of contacts revealed by that examination [8].

c. STD Clinic: Establishing STD clinics where all consultation, investigation and treatment, contact tracing and all other relevant services are available is an essential part of prevention and control of STDs. Because of the stigma attached to the STD clinics, many patients seek alternative sources of medical care including self-medication. It is now being considered to integrate STD clinic service into the primary health care services. This service should be free, easily accessible and available. There should be suitable arrangements for treating female patient separately and maintain the patient's desired anonymity. In India there is a National STD Control Programme where 'syndromic approach' is adapted for prevention and control of sexually transmitted diseases [2].

d. Laboratory services: Adequate laboratory facilities and trained staff are essential for proper patient management. It provides a basis for correct aetiological diagnosis and treatment decision, for contact tracing, surveillance of morbidity and detection of antimicrobial resistance [9].

e. Primary health care: As STD control activities are integrated into primary health care system, it imply the inclusion of primary health care workers (eg. village health guides, multi purpose workers) in the STD 'health team'. Then only it will be possible to provide effective treatment to the greatest number of cases in the community [2].

f. Information system: The basis of an effective control of any communicable disease is an existence of a robust information system. Three types of data requirement are relevant in the control of STDs: clinical notification, laboratory notification and sentinel and adhoc surveillance. National notification system at best includes only the classical venereal diseases where existing reporting systems suffer from under notification, inaccurate diagnosis and concealment of cases owing to social stigma. Without a notification system, it is not possible to assess the magnitude of the problem, to allocate resources and to evaluate the impact of control measures. There is an urgent need to develop an effective and

detailed reporting system of STDs in countries where it does not exist [9].

g. Legislation: Many countries are still far away in enacting suitable legislation for the control of STDs [10]. The purpose of legislation should be to encourage patients to seek early treatment and name their sexual contacts, to screen high risk groups to improve notification by general practitioners, health education of the public etc. The Immoral Traffic (Prevention) Act,1986 covers all persons whether male or female who are exploited sexually for commercial purposes. It makes punishment for the offences under the Act more stringent than the previous Act [2].

Social Welfare Measures

STDs are social problems with medical repercussions. It implies there should be 'social therapy' which would prevent or control the conditions leading to promiscuity and STDs. The various social measures include:

1. Rehabilitation of commercial sex workers
2. Provision of recreation facilities in the community
3. Provision of decent living conditions (home discipline, parents should understand that their own sex behavior influences the children).
4. Marriage counseling
5. Sex education in school and colleges
6. Prohibiting the sale of sexually stimulating literature, pornographic books, photographs and films etc. [2].

Conclusion

Appropriate treatment at the first point of contact with the health system is an important measure to prevent further transmission and development of complications. Health providers from both private sector and public system should be given frequent periodic training regarding syndromic management of STIs and the training should stress on the need for risk reduction and condom promotion messages along with medical management. Program planners should take necessary steps to ensure adequate and continuous supply of free drugs and tackle issues of confidentiality and privacy. Without promotion of health and sex education, STDs cannot be prevented.

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STI/RTI Prevention and Control Programme in India

Dr. S.K. Singh | Dr. Abhishek Gupta | Dr. Uday Mohan

Abstract

Diseases that are transmitted by sexual contact are known as STDs. It includes infections and clinical diseases like syphilis, gonorrhea, chancroid, donovanosis, nongonococcal urethritis, genital warts, herpes genitalis and diseases or infections that may not cause clinical disease of genitals, but are transmitted by sexual interaction e.g., all STDs and hepatitis B, Human Immunodeficiency Virus (HIV), Human T-cell Lymphotrophic Virus type-1 (HTLV-1) etc.

National STD Control Programme has been in operation since the mid-1950s which is now a part of National AIDS Control Programme (NACP). Objectives of STI/RTI control and prevention program are: Reduce STD cases and there by control HIV transmission by minimizing the risk factor and Prevent the short term as well as long term morbidity and mortality due to STD.

The STI/RTI Prevention and Control Programme is providing effective control of sexually transmitted infections including Reproductive Tract Infections for general population through continued support to the designated STI/RTI clinics (Suraksha Clinics) in public sector and for high risk population through Targeted Interventions (TI) programme.

Introduction

Diseases that are transmitted by sexual contact are known as STDs. Sexual transmission requires the agent to be present in one partner, the other partner to be susceptible to infection

with that agent and that the sex partners engage in sexual practices, which can transmit the pathogen. Sexually Transmitted Infections (STIs) differ from Sexually Transmitted Diseases (STDs) in that - STDs conventionally includes infections resulting in clinical diseases that may involve the genitalia and other parts of the body participating in sexual contact e.g., syphilis, gonorrhea, chancroid, donovanosis, nongonococcal urethritis, genital warts, 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 STDs and hepatitis B, human immunodeficiency virus (HIV), Human T-cell lymphotrophic virus type-1 (HTLV-1) etc. Nowadays, the term STI is preferred, since it covers all the diseases that can be transmitted by sexual contact. However, for all practical purposes, both STI and STD are used synonymously [1, 2].

Sexually Transmitted Infections (STI) increases chance of acquiring and transmitting HIV infection by 4 to 8 times, so control and prevention of STI is a key prevention strategy for HIV. Syndromic Case Management (SCM), with minimal laboratory tests is the cornerstone of STI/RTI management in India [3].

National STD Control Programme has been in operation since the mid-1950s which is now a part of National AIDS Control Programme (NACP)[4]. Phase I of NACP was started in 1992 followed by NACP II in 1999, NACP III in 2007 and latest NACP IV in 2014 which aims to provide universal, comprehensive, standardized and quality STI/RTI services to all population with special emphasis on High Risk Group (HRG) population and vulnerable groups, including women and adolescents [4].

The STI/RTI Prevention and Control Programme aims for providing effective control of sexually transmitted infections including RTIs for general population through continued support to the designated STI/RTI clinics (Suraksha Clinics) in public sector and for high risk population through Targeted Interventions (TI) programme [5].

Targeted Intervention (TI) programme is one of the most important prevention strategies under NACP [6]. TIs comprise of preventive interventions working with focused client populations in a defined geographic area where there is a concentration of one or more High Risk Groups (HRGs) [6]. The key high risk groups covered through Targeted Intervention (TI) programme include Core High Risk Groups (HRGs) such as Female Sex Workers (FSW), Men who have Sex with Men (MSM), Transgender/Hijras (TGs), Injecting Drug Users (IDU) and Bridge Populations such as Migrants and Long Distance Truckers [6]. Relation between these groups with general population and transmission of STI/RTI is shown in figure 1. TI projects provide a package of prevention, support and linkage services to HRGs through outreach-based services delivery model which includes screening for and treatment of STI, free condom and lubricant distribution among core groups, social marketing of condoms, Behaviour Change Communication (BCC), creating an enabling environment with community involvement and participation, linkages to integrated counselling and testing centres for HIV testing, linkages with care and support services for HIV positive HRGs, community mobilization and ownership building and specifically for IDUs, distribution of clean needles and syringes, abscess prevention and management, Opioid Substitution Therapy (OST) and linkages with detoxification/ rehabilitation services [6].

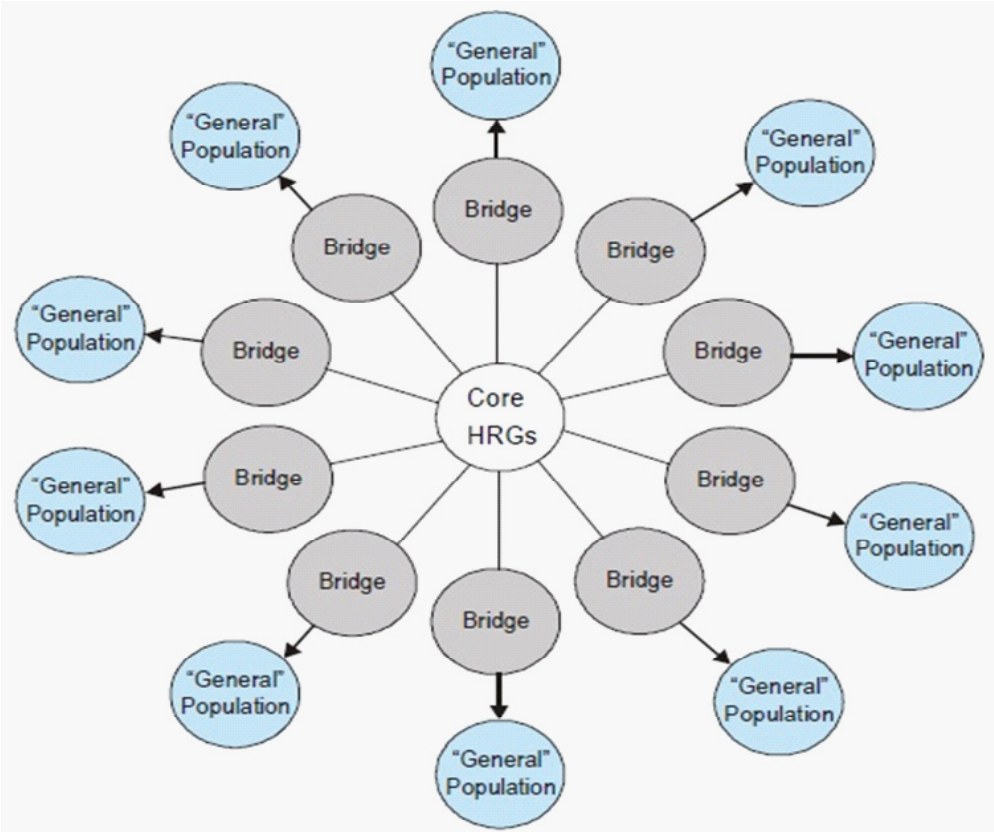

Figure 1: Transmission of STI/RTI from Core HRGs to General Population

The vision of STI/RTI control and prevention program during NACP IV is to provide quality standardized STI/RTI services at all levels of health system through convergence with National Health Mission (NHM) and private sector, especially focusing on women, adolescent and marginalized population [4].

Objectives of STI/RTI control and prevention program are: a) Reduce STD cases and there by control HIV transmission by minimizing the risk factor. b) Prevent the short term as well as long term morbidity and mortality due to STD.

The specific strategies are as follows : Provision of standardized STI/RTI management to general and vulnerable population at all government health facilities in convergence with National Rural Health Mission NRHM [4]. Scaling up by partnering with organized public and private sector to enhance reach and coverage of the program [4]. Provision of quality STI/RTI services to high risk group population through flexible approach of service delivery [4]. Provision of laboratory support for etiologic diagnosis and surveillance of STI/RTI. Strengthening capacity building and mentoring needs to achieve quality STI/RTI service delivery through all facilities [4].

Current Status

During 2014-15, against the physical target of treating 70 lakh episodes of STI/RTI, 75.46 lakh episodes of STI/RTI were treated [5]. A study published in 2015 showed that prevalence of STI among the female sex workers as per syndromic diagnosis was 35.8% in a city of north India [7].

NACO target was to manage 80 lakh episodes of STI/RTI in 2015-16, out of which the programme has achieved 48.48 (60.6%) lakhs till October, 2015 [3]. A total of 18,72,391 rapid plasma reagin (RPR) tests were conducted among attendees of DSRCs of which only 0.4% were reactive [3]. Among the pregnant women attending antenatal care, 18,08,120 lakhs were screened for syphilis of which 2738 (0.15%) were found reactive for syphilis and were provided treatment [3]. The sero-prevalence of Syphilis is observed to be declining steadily among patientswith STI/RTI, pregnant women and high risk groups [3].

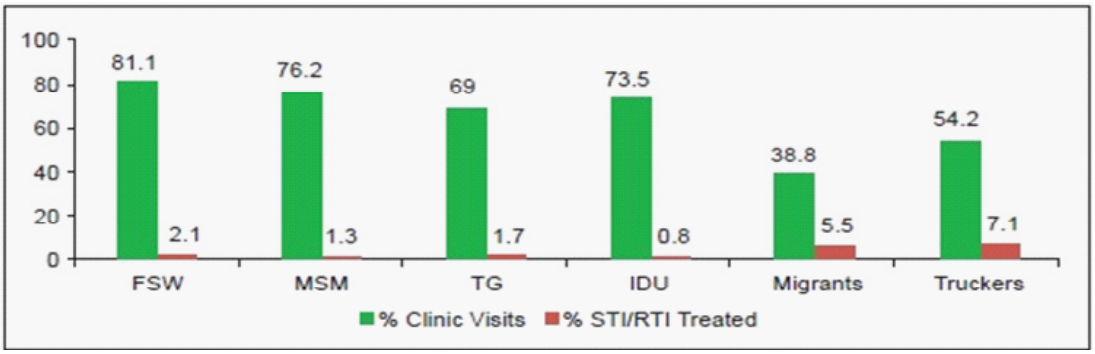

Figure 2: STI clinic visits during 2015-16 (Up to Sept 2015) [6]

Sl. No.	Indicator	2013-14	2014-15	2015-16
1	Total number of cases managed	71.6 lakh	79.6 lakh	89.2 lakh
2	% STI attendees Tested for Syphilis	34%	22%	40%
3	% Sero Positive for Syphilis	M=0.83%, F=0.5%	M=0.97%, F=0.37%	M=0.64%, F=0.23%
4	% STI attendees Tested for HIV	37%	19%	36%
5	% Sero Positive for HIV	M=0.95%, F=0.6%	M=1%, F=0.41%	M=0.57%, F=0.35%

Table 1: Status of Syphilis and HIV [4]

Progress & Expansion of STI/RTI Services in Government Health Facilities

The Network of STI Laboratories comprise of 01 Apex Laboratory, 09 Regional STI Training, Research and Reference Laboratories, 45 State Reference Centres (SRC), Integrated Counselling & Testing Centre(ICTC) / Hospital laboratories linked to Designated STI/RTI clinics (DSRC)[4] that provide validation of syndromic case management by doing etiologic testing, antibiotic susceptibility testing for Gonococci, External Quality Assurance Services (EQAS) for syphilis [4].

Designation STI/RTI Clinics are located at Medical Colleges, District Hospitals and in some area hospitals (sub-divisional and /rural hospitals). The program offers free treatment using standardized STI colour coded treatment kits to treat common STIs/RTIs syndromes [4]. Program has branded the DSRCs as 'Suraksha Clinics' which has improved the footfalls [4].

The four implementation structures of the STI/RTI Programme are as follows:

1) Designated STI/RTI Clinics
2) Targeted Interventions
3) NHM facilities
4) Regional STI Training Referral, Research Laboratories & State Reference centres

Provision of STI/RTI Services in High Risk Group Population

There are 1677 (till October 2015) Targeted Intervention Projects where STI services are being provided to the High Risk Group for free [4]. Services are also available for truckers and migrants at subsidized rate. Partnerships with the private sector have seen more than 3400 private providers (project provides maximum consultation fee of @Rs75/- per consultation, free drugs and free HIV and Syphilis testing) [4]. Preferred private provider approach has been rolled out to scale up STI/RTI services to HRG population under TI Projects. These providers are selected by the community members through group consultation [3]. This mechanism saw tremendous increase in the access to services of HRGs from 0.23 million in 2007-08 to 4.67 million in 2015-16 (>20 fold increase) [4].

Partnering with Organized Public Sector, Public Sector Undertaking and Professional Organization

The major proportion of patients with STI/RTI seek services from network of private healthcare delivery systems ranging from freelance private practitioners to large public hospitals [3]. Also, many are accessing services from public healthcare systems under other sectors like railways, ESI, armed forces, CGHS, port hospitals as well as health facilities of public sector undertakings like Coal India Ltd, SAIL etc. [3]. It has been felt that reaching out to maximum numbers of people suffering from STI/RT is not possible without partnership with private sector and organized public sectors. NACO has initiated partnership with organized public sectors and private sectors through professional associations to support the delivery of STI/RTI services with the objective to reach the populations presently not covered by the public healthcare delivery system [3]. In addition program is in active engagement with professional bodies like IMA and FOGSI etc. [4]. Functional integration with the RMNCH+A Programme of the National Health Mission has helped both programmes mutually [4].

Joint STI/RTI operational guidelines have been developed which is standard for implementing

STI/RTI control and prevention program across different health care Institutions right from primary health centres (PHCs) up to the Medical Colleges [4].

New Initiative under STI/RTI Programme

Under Elimination of Parent to Child Transmission (EPTCT) Programme of Syphilis, NACO and Maternal Health Division are aiming for early registration, early screening for both Syphilis and HIV and treat those found reactive, promote institutional delivery and follow up the new born up to 18 months of age [3].

The latest directives [3,4,9] issued provide for universal screening for Syphilis and HIV; task shifting of testing to Auxiliary Nurse Midwifery (ANMs) using Point of Care (POC) test kits for both infections and their management once detected positive at Primary Health Centre (PHC) and above health facilities including promoting institutional delivery and tracking the Mother-Baby pair till the child attains 24 months of age.

Ministry of Health and Family Welfare, Govt. of India has included indicators for capturing data on screening tests done by ANMs for HIV and Syphilis using POC tests as well as indicators for confirmatory tests done at PHC/CHCs (Community Health Centres) of rapid plasma reagin (RPR) and HIV Rapid Antibody Tests, in the Health Management Information System (HMIS) formats [4].

A booklet 'Shaping our Lives: (Version -2)' a training/ knowledge booklet for ANMs/ASHA workers/ Anganwadi Workers and members of SHGs with recent updates on the PPTCT Programmes of HIV and Syphilis has been developed [4]. The goal is to eliminate of Parent to Child Transmission of HIV & Syphilis by 2020 [4].

Key Issues and Challenges

Following are the key issues and challenges in implementing STI/RTI programme in India.

- A recent study in Lucknow showed that knowledge about the role of condom in prevention of STI and the STI-HIV link was significantly less among home-based FSWs (Female Sex Workers) than those who are street-based. There is a great lack in the awareness among FSWs regarding STI and their prevention [8].
- Saturation of Syphilis testing of pregnant women and non-availability of Benzathine Penicillin in hospitals and decreased preference among health providers to recommend Penicillin are the key bottle necks [4].
- Lack of recent data on burden of STIs amongst general population and HRG ; But high prevalence of Syphilis amongst STI Clinic attendees in many states of India [4].
- Inadequate spouse/ partner testing.
- Lack of training and skill building in the field due to limited resources. Participation of Private sector and organised sector in STI programme is still very less. Private sector adherence to standard STI treatment guidelines & reporting requirements is low [4].

Conclusion

STI/RTI Prevention and Control Programme in India is providing continued support for effective control of STI/RTI, treatment of general population through designated STI/RTI clinics (Surakasha Clinics) and high risk population through Targeted Intervention (TI) programmes. Designated STI/RTI Clinics which are service delivery terminals are located at Medical Colleges, District Hospitals and in area hospitals (Sub-divisional hospitals /

Rural Hospitals/ CHCs/PHCs). The program offers free treatment using standardized STI colour coded treatment kits to treat common STI/RTI syndromes. The program also reaches employees of organized sectors under public undertakings (Railways, Employees State Insurance Corporation, Port Trust, Defence and Professional Associations), and private sectors by developing partnerships. New Initiative under STI/ RTI Programme aims to eliminate parent to child transmission (EPTCT) of syphilis.

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Sexually Transmitted Diseases in Ayurveda

Dr. Swapnil Saxena

Abstract

Sexually transmitted diseases (STD) have been reported since the ancient times with their description dating back to the time of Sushruta and Charaka. Though there has been a description of various diseases in Charaka Samhita with similar symptoms to the infection of Trichomonas and Chlamydia, but a clear reference to their sexual mode of transmission is not available. The diagnosis in Ayurvedic texts is made clinically, based on the symptoms. Despite of the vivid description of sexually transmitted diseases in the ancient Ayurvedic texts, it is difficult to identify their exact modern counterparts on the basis of these texts. The two most commonly talked about STD in various ayurvedic texts are firang and updansha. This article provides an overview on the evolution of STDs, their nomenclature in different eras and Ayurvedic treatment as an alternative system of medicine.

Introduction :

STD include the diseases which are transmitted through sexual contacts when body fluids are exchanged. The sexual transmission depends on the susceptibility of partner to the pathogen and indulgence in sexual practice with the infected partner [1]. The concept of transmission of diseases through unsafe sexual practices was known since the time of Acharaya Sushruta (1000-1500BC). He mentioned about the spread of kustha, updansha, pooymeha through sexual contact of the infected man with a woman and vice versa. This has been discussed in reference to the aoupsargik rogas (contagious diseases) and their spread [2]. The description of sexually transmitted diseases was also seen in the Charaka

Samhita (2nd century AD). The Bhavaprakash Samhita also has a vivid description of STDs (updansha & firang) and it was written around 16th century AD.

Epidemiology

According to a study conducted in United States, adolescents and young adults (15-24yr) make up only 25% of sexually active population but contribute 50% to the total share for newly diagnosed STDs [3]. The incidence of major viral and bacterial STDs worldwide is estimated to be more than 125 million cases yearly [4].

According to study conducted at JIPMER in India by Thapa et al (2007) genital herpes was the commonest infection followed by syphilis and condyloma acuminate. Upto 10% of patients have mixed lesions [1]. No study has been conducted, to the best knowledge of author, to know the prevalence or distribution of sexually transmitted disease based on criterias and lesions described in Ayurveda.

Description of STD in Sushruta Samhita

The classical explanation of various types of Updansha, a sexually transmitted disease and its causative factors as mentioned by Sushruta, are dusta yoni viyonivanaarimatyarthamupsevmaanasya (excessive coitus with an infected woman) hasta abhighata (abrasion due to hand while masturbation), aprakshalana dibhimedhra (not cleaning the genitalia), chatushpadi gamanaad (beastility/ unethical sexual indulgence). These factors cause local lesions and inflammation of the genitalia. This leads to vitiation of doshas in the injured genitalia [5]. Updansha can further be classified into five types as per the symptoms that develop in the due course of time. These are vataja updansha, pittaja updansha, kaphaja updansha, sannipataja updansha, raktaja updansh [6]. In vataja updansha the symptoms encountered are parushya (dryness), twakpariputanam (cracks on the genitalia), parushshophatavividhaschvatavedana (pain and swelling with sensory loss). In pittaja updansha jwara (fever) and shvayathu (swelling) teevradaha (excessive burning sensation), kshiprapaka (rapid suppuration). The symptom of kaphaj aupdansha apart from swelling is, severe itching. The symptoms of raktaja updansha are krishnasphota atyarthama srik privratti (blister formation and discharge of blood). The symptoms of sannipataja updansha include mixed symptoms as described in each of the above types of updansha along with avdaranam cha shefasah (longitudinal cracks on penis) and krimipradurbhaavo maranam (infestation with worms and finally death) [7].

Apart from these, Sushruta has mentioned about lingaarsh and yonyaarsh (genital warts). Though the explanation for their spread through sexual contact is not mentioned but there is explanation of features similar to what we find today in context of genital warts. Sushruta said that due to vitiation of maansa and rakta there develops itching in the penis of male which later on gives rise to warts over the area. There occurs picchil rudhirasraava (sticky blood mixed discharge) from the penis. In a similar way due to vitiation of rakta and maansa there is development of warts in women, produce a sticky and bad odoured discharge [8].

Description of STD in Bhavaprakash Samhita

In a similar way updansha has been mentioned along with its five types by Acharya Bhavaprakash.

He also mentioned about its transmission through sexual contact [9].

Another sexually transmitted disease first talked in Bhavprakash Samhita is firang. He mentioned about its transmission through sexual contact with a woman of firanga desh (some foreign country). It is also an example of aaguntaja sankramaka roga (highly contagious disease). There is clear indication of its spread through unsafe sexual indulgence {sansargaat / prasangaat (sexual intercourse)} [10]. Firang was known to Indian subcontinent since the time of Bhava Misra (16th century) and was called Portuguese disease, which soon became widespread [11].

Firang has been classified as baahya and aabhyantar. The symptoms of baahya firang are sphota (blisters on genitalia) and alparuja (mild pain). The aabhyantar firang has symptoms which manifest in joints and cause inflammation. The upadarava (complications) offirang include kaarshya (weakness), balakshaya (weight loss), agnimandhya (anorexia), asthishosha (destruction of bones), nasabhang (loss of nasal cartilage) [12].

Description of STD by Charaka

Yet another STD described in Charaka Samhita, which has symptoms resembling updansha is dhwajbhang. While describing kleevta (impotency) Aacharya Charaka has mentioned that it can be due to four reasons. Among those four, one is due to Dhwaja bhanga. Among other factors, Dhwaja bhang results from ayonigaman (beastility), deergha rogini (coitus with woman suffering from disease since long), dushta yoni parisrutaam (intercourse with women suffering from such infection and infected vaginal discharge). The symptoms of dhwaja bhang (destruction of genitalia) is redness, inflammation and pain, purulent discharge and blisters on penis. There also occurs whitish or red yellow discharge from penis. Along with these symptoms there occurs fever, weight loss and severe burning sensation [13].

Comparison of various STDs described in ayurveda and modern literature

It is difficult to identify their exact modern disease entities on the basis of signs and symptoms described in ancient ayurvedic texts [14]. However symptoms of firang are comparable to what we know as syphilis today as initial symptoms of blisters on genitalia with mild pain followed by complications ranging from joint pain, anorexia, destruction of bone and nasal cartilage matches with that of description of syphilis in current literature. Comparison can also be drawn between description of updansha with symptoms (dryness, pain and cracks on genitalia) with that of chancroid.

Treatment and prognosis of STDs in Ayurveda

For treatment of updansha, Sushruta has mentioned about rakta mokshana (blood letting), and ubhay marg nirharan {vaman (emesis)/ virechan (purgation) therapy)} [15]. Acharya Bhava Misra also mentioned of raktamokshan and vaman, virechan and niroohvasti (procedure in which a herbal decoction mixed with salt, honey, oil etc. is administered through anal route) [16]. Apart from this Bhava Misra has mentioned the lepan dravyas (drugs for local application) for all types of updansha according to their symptoms. For the symptoms of vatajaupdansha, kalk (paste) of mulethi (Glycyrrhiz aglabra), agar (Aquilaria

agallocha), raasna (Plucheal anceolata), elaichi (Elettaria cardamomum) is to be applied locally and the kwath (decoction) be used for parishek (pouring of warm decoction). For pittaja updansha kalkaofnishoth (Operculina turpethum), khas (Vetiveria zizanioides), chandan (Santalum album) kamal (Nelumbo nucifera) to be applied locally. For kaphaja updansha bark of sal tree (Shorea robusta) mixed with oil is best for local application. In raktaja updansha for local application kalk and kwathparishek by neem (Azadirachta indica),arjun (Terminalia arjuna), peepal (Ficus religiosa), jamun (Syzygium cumini), bargad (Ficus bengalensis), gular (Ficus racemosa) helps relieve the symptoms. Sannipataj aupdansha has been described to be non curable, washing the genitals with triphala (haritaki/Terminalia chebula , bibhitaki/ Terminalia belerica, amalki/Emblica officinalis) kwatha (decoction) and bhringaraj (Eclipta alba) swaras (juice) and symptomatic treatment can be given [17].

For the treatment of firang, ras karpoor, saptashaali vati have been advised as the drug of choice [18].

For yonyaarsh and lingarsh, Sushruta has mentioned the use of either of the four procedures, namely aoushadh, kshaar, agni and shastra. Aoushadh is the medicinal treatment, kshaar treatment involves the use of kshara sutra (medicated caustic thread) or direct application of kshara on the infected area, agni (thermal cautery) and shastra (surgical excision) [19].

Bhava Misra mentions that newly diagnosed, bahaya type firanga without the development of complications as mentioned above is curable [20]. Where as updansha with development of necrosis of genitalia, vitiation of all three doshas (vata, pitta, kapha) is not curable [21].

Conclusion

Ancient ayurvedic texts describe various sexually transmitted disease and their associated lesions, complications and their treatment. However because of lack of studies based on these texts it is difficult to comment prevalence and incidence of STDs based on these criterias. It is also difficult to draw comparison between lesions described in ayurvedic literature and current nomenclature used in venerology, except for few diseases. Further studies are needed to explore the sexually transmitted diseases based on ayurveda and to establish the efficacy of ayurvedic treatment in their management.

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Fear of Getting HIV Infection : A Case Study from Psychiatric Clinical Practice

Dr. Divyesh Vernwal

Clinical Presentation

A 35 year old, married, truck driver referred to the psychiatric outpatients department for complaints of headache, palpitation, restlessness, lethargy, poor appetite and abdominal pain for more than 6 months. Patient was constantly worried about his symptoms, and their seriousness. History revealed about sexual contact with commercial sex worker with use of condom. Initially he was worried of acquiring Human Immunodeficiency Virus (HIV) for which he had undergone multiple testing. Results were negative. Despite the negative test results, he was very much distressed and not able to convince himself for being healthy. There was no history of cough, sore throat, prolonged feverwith chills or rigors, and evening rise of temperature, burning micturition. Intensity of symptoms fluctuate. Patient had undergone various investigations including testing for HIV infection several times from different pathological laboratories, but results were within normal limits. Patient occasionally consumes alcohol. Pre-morbidly the patient was well adjusted to life; however history suggested that during his early adolescence, he used to feel anxious and worry on trivial issues. He would also worry for minor issues related to health. In past whenever he became sick, he would become very apprehensive and undergone various investigations and would be assured with very difficulty even all findings were within normal limits. His academic and work performances were also affected because of this behavior.

There is history of depression in his mother and it was treated adequately by a psychiatrist. On mental status examination, patient was found conscious, co-operative, well-oriented to time, place and person. He was having predominantly anxious mood, pessimistic view about future and had preoccupations of having HIV infection. His general physical examination and systemic examinations were within normal limits.

Clinical investigations

The body mass index (BMI) score was 24.5. All routine blood investigations were within normal limits. He was nonreactive for Hepatitis C antigen, HIV 1,2 and was western blot test- negative.

After clinical evaluation the patient was diagnosed with 'Somatisation Disorder' according to International Classification of Diseases, 10th edition (ICD-10).

Management

Both non-pharmacological andpharmacological measures started simultaneously. Patient was first counselled about his illness and his irrelevant apprehensiveness and worries about symptoms. Hewas explained about safe sexual practices and avoidance of risky behaviours.

Psychological interventions had focussed on issues of stress and use of appropriate coping skills to handle it. Patient was given proper rationales and facts to clear his queries and myths. Progressive muscular relaxation exercises sessions were taken.

Pharmacological treatment continued with antidepressant (Escitalopram 10 mg at night time) and anxiolytic agent (Clonazepam 0.5 mg/day in divided doses).

Outcome

After several sessions of relaxation exercises and psychotherapy, feedback was taken from the patient. He reported significant improvement in his symptoms and was able to cope with stress. Frequency and intensity of various somatic complaints also decreased. After one month of therapy, there was a noticeable improvement in mood and substantial decrease in other symptoms like headache, palpitation, excessiveworry etc. He was adhered to the treatment till two months follow up.

Conclusion

In somatoform disorders, the major symptoms of presentation are physical symptoms, but evidences of obvious medical disorder that can explain those symptoms are not there. There are evidencesthat link physical symptoms with psychological factors or conflicts. Patients with somatoform disorder undergo significant psychological distress and use maladaptive coping methods to counter their distress. Substance abuse tendency is common in patients with somatoform disorders to get rid of somatic pain [1]. Knowledge about somatoform disorders is now accumulating which shows that it is a treatable condition, particularly in the early stages before its illness-behaviour aspects have become embedded. In Somatoform disorder, cognitive behaviour therapy (CBT) and counselling are two good options to help with treatment [2]. A cadre of well-trained therapists who are knowledgeable in the principles and practice of CBT is required in both family practice and tertiary care settings, where most somatisation disorder patients are found [3].

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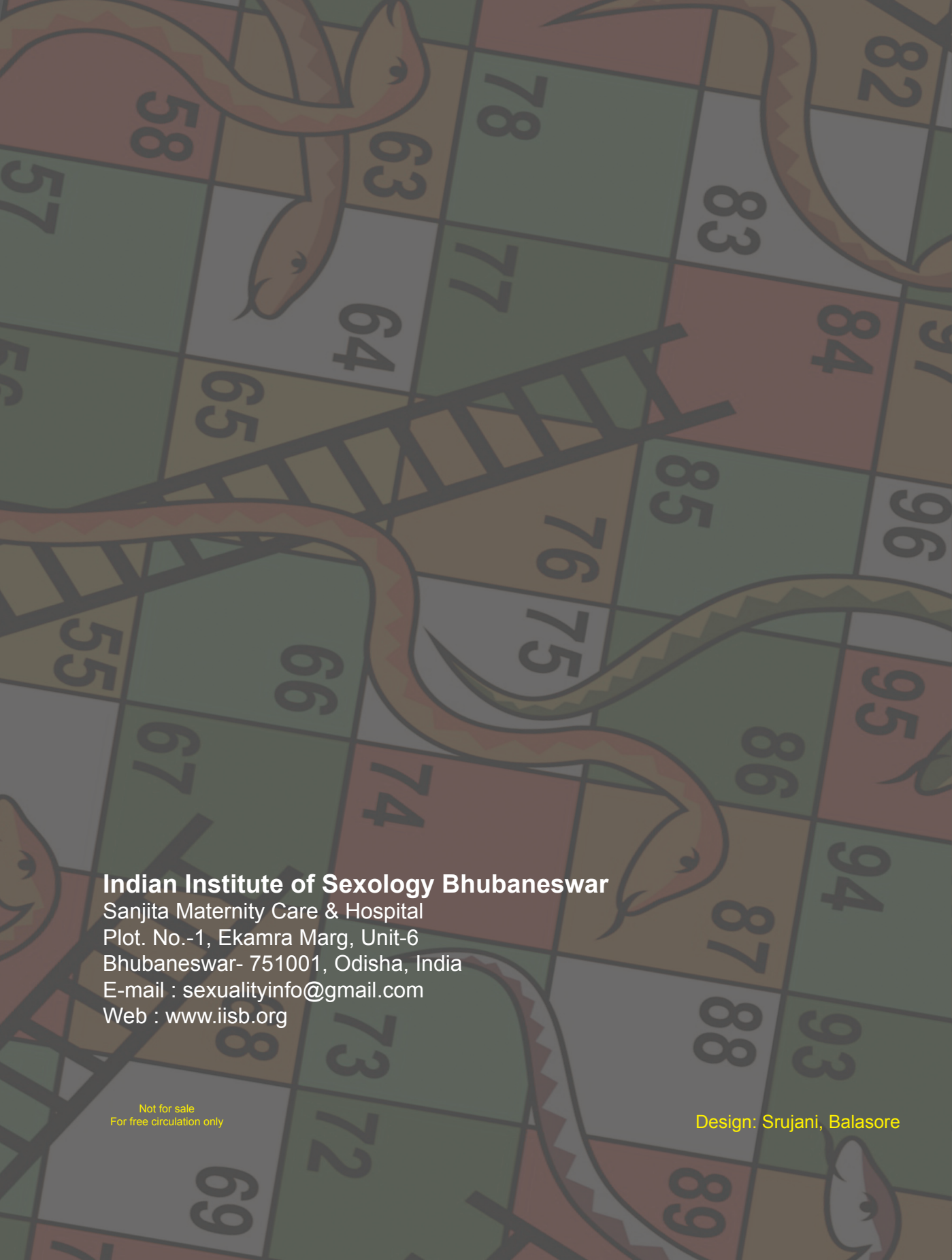

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