Syndromes associated with sexually transmitted infections

Max A Chernesky PhD1, David Patrick MD2

Excellent technologies have been developed to identify the specific microbial agents of chlamydia, gonorrhea, syphilis, herpes, chancroid, trichomoniasis, human papillomavirus and HIV infection. However, it is also crucial to recognize syndromes that may be caused by one or more sexually transmitted pathogens. When laboratory services are lacking or are inadequate to provide timely results to enable appropriate treatment, some patients must be managed and treated syndromically. Most Canadian laboratories should be able to provide diagnostic services to determine the etiology of syndromes such as cervicitis, urethritis, pelvic inflammatory disease, prostatitis, genital ulcers, sexually transmitted infection (STI)-related enteric infections, epididymitis, hepatitis, ophthalmia neonatorum, vulvovaginitis and vaginosis.

CERVICITIS

Cervicitis is frequently asymptomatic. However, it may present with lower abdominal pain, intermenstrual, postcoital or prolonged abnormal vaginal bleeding, deep dyspareunia and, occasionally, vaginal discharge more typical of vaginitis. Such symptoms should prompt a pelvic examination. Signs of cervicitis include purulent or mucopurulent discharge at the cervical os. The presence of ectopy is entirely nonspecific. There may also be an increased number of polymorphonuclear leukocytes (PMNL) in the endocervical secretions. However, there is no diagnostically useful cutoff for PMNL count on cervical smear. Therefore, the clinical diagnosis centres on the presence of endocervical yellow or green mucopus. Such a finding in high-risk patients is reasonably predictive of the presence of Chlamydia trachomatis or Neisseria gonorrhoeae and should result in syndromic treatment that is active against both pathogens. However, the same finding in low-risk patients is quite nonspecific and should trigger only specific testing for both of the above-named pathogens. Risk factors for cervicitis include substance use, new or two or more sexual partners in the last six months, contact with a known STI case, having a previous STI or being street involved.

C. trachomatis and N gonorrhoeae are the most important causes of cervicitis and are frequently present alone or together, without symptoms, signs or a PMNL response. There is insufficient evidence to incriminate ureaplasmas or mycoplasmas as causes of cervicitis. Cervical swabs or urine (first 20 mL) are suitable female samples for C trachomatis and N gonorrhoeae testing in nucleic acid amplification (NAA) assays. In terms of male samples, urine and urethral swabs are equally good.

ENTERIC INFECTIONS

Anal intercourse is the main mode of transmission of pathogens causing proctitis, whereas anai/oral activities promote proctocolitis, colitis and enteritis. Giardia lamblia infection has been reported in promiscuous homosexual males. Symptoms of proctitis may include anorectal pain, tenesmus, constipation, bloody stools or mucopurulent discharge. Findings with sigmoidoscopy may include erythema, friability or ulceration within the first 15 cm of the rectal mucosa. The inflammation is usually due to direct inoculation of N gonorrhoeae, C trachomatis or herpes simplex virus (HSV). Treponema pallidum results in a focal, usually painless ulceration with little or no surrounding inflammation. Human papilloma virus results in wart-like lesions or dysplasia, but rarely inflammation. Symptoms of colitis or enteritis may include diarrhea, abdominal pain, bloating, cramps, nausea or fever. The colon beyond the rectal mucosa may be inflamed; this may be due to infection with organisms not usually sexually transmitted, such as Entamoeba histolytica, Campylobacter or Shigella species, Clostridium difficile or Escherichia coli. In patients with HIV infection, other pathogens may be involved, such as Cryptosporidium, Isospora, Microsporidia, Mycobacterium avium complex or Salmonella species. Stools and anal or rectal swabs are appropriate for laboratory investigation. If anal ulcers are observed, material should be collected for HSV, syphilis culture or NAA testing.

EPIDIDYMITIS

Infectious epididymitis is not common in Canada, but presents with the acute or subacute onset of unilateral or bilateral testicular pain and swelling. The epididymis and vas deferens are often tender, and the overlying skin may be erythematous and edematous. The causative organisms in younger men (less than 35 years of age) are C trachomatis and N gonorrhoeae, whereas Gram-negative aerobes and other classical urinary tract pathogens may be implicated in older men. Specimens for laboratory analysis may be meatal or urethral swabs, and urine for C trachomatis and N gonorrhoeae testing. Serological testing for syphilis and HIV should also be considered. It is vital to rule out testicular torsion.

GENITAL ULCERS

Ulceration or vesicular lesions with or without lymphadenopathy anywhere in the distribution of the sacral nerves may be caused by HSV. Lesions on the glans, prepuce, penile shaft,
HEPATITIS RELATED TO SEXUAL ACTIVITIES

STI causes of liver inflammation include the hepatitis B virus, hepatitis A virus, cytomegalovirus and Epstein-Barr virus. The hepatitis C virus is very rarely sexually transmitted, but any sexual practice that allows exposure to blood is believed to carry increased risk. Acute infection is often asymptomatic but symptoms, when present, may include malaise, anorexia, jaundice, arthralgia, urticaria or fever. Risk factors for the sexual transmission of hepatitis B virus (the most common cause of hepatitis related to sexual activity) include having multiple partners, having sex with commercial sex workers, having sexual contact with an acute case or chronic carrier, being immunized, being a man who has sex with men and being street involved. Hepatitis A virus transmission is a problem for men that have anal/oral sex with men. Laboratory investigations involve submitting a clotted blood specimen for the detection of viral markers or antibodies specific to the agents listed above.

OPHTHALMIA NEONATORUM

Ophthalmia neonatorum is an inflammation of the conjunctiva in infants born to mothers infected with C. trachomatis, N. gonorrhoeae or HSV. More extensive disease may develop involving keratitis and corneal ulceration (HSV) or dissemination to the lungs (chlamydia pneumoniae). Conjunctival swabs and nasopharyngeal aspirates are normally collected for submission to the laboratory.

PELVIC INFLAMMATORY DISEASE

Pelvic inflammatory disease (PID) is an infection of the female upper genital tract that usually involves the uterus and fallopian tubes but may spread to involve other structures in the pelvic cavity. Symptoms of PID may include lower abdominal pain of recent onset, irregular menstrual bleeding, deep dyspareunia or unexplained vaginal discharge. Although many cases of PID may be silent or asymptomatic, the syndrome may be identified during a pelvic examination with a finding of lower abdominal, adnexal and cervical motion-tenderness. Additional useful but insensitive diagnostic criteria include an oral temperature above 38°C, white blood cells in vaginal secretions, elevated erythrocyte sedimentation rate or elevated C-reactive protein. Laparoscopy enables a definitive diagnosis of PID. Samples for a laboratory diagnosis of infectious etiology involves the collection of endocervical swabs, endometrial biopsy or laparoscopic aspirate material to be examined for C. trachomatis (most common), N. gonorrhoeae, HSV or Trichomonas vaginalis. Other organisms that may be involved include mycoplasmas, ureaplasmas, anaerobic bacteria or facultative aerobic bacteria. Blood cultures should be obtained from patients with high fever or a septic picture.

PROSTATITIS

Inflammation of the prostate with an increased number of PMNLs and an increased number of bacteria in prostatic fluid or urine obtained after prostatic massage is indicative of bacteri prostatitis. Prostatitis is not usually an STI but may yield Gram-negative urinary pathogens or Gram-positive urethral organisms when prostatic fluid or urine is cultured. C. trachomatis, N. gonorrhoeae and T. vaginalis have also been associated with prostatitis. HIV patients may also develop cytomegalovirus prostatitis. The condition may also occur in a chronic form, with or without obvious signs of infection or inflammation. Prostatic fluid and a clotted blood specimen may be submitted to the laboratory.

URETHRITIS

Urethritis is an inflammation of the urethra with an increased number of PMNLs on examination of urethral discharge or meatal swab. The most common symptoms in males include dysuria and/or urethral discharge. Irritation in the distal urethra or meatus, enuresis, or unwillingness to void may also be reported. In women, dysuria and urinary frequency with sterile pyuria (PMNLs on urinalysis with a negative urine culture) may indicate urethritis and may accompany cervicitis. C. trachomatis or N. gonorrhoeae are commonly implicated. Other organisms, such as Ureaplasma urealyticum, T. vaginalis or HSV, may also be present in the discharge and may play an etiological role. Urethral or urine samples should be collected from men. Swabs from the urethra and cervix should be collected from women, along with urine for NAA testing for C. trachomatis and N. gonorrhoeae, and culture for Gram-negative agents of urinary tract infection.

VULVOVAGINITIS, VAGINOSIS

Vaginitis is an inflammation of the vulva, vagina or both, usually accompanied by abnormal vaginal discharge. By contrast, vaginosis is not associated with inflammation but rather with a profuse malodorous discharge. There are several noninfectious causes of vaginitis or vaginosis. The following discussion will focus on common syndromes caused by microorganisms.

In bacterial vaginosis (BV), there is a disruption of the normal lactobacilli-dominant flora of the vagina. When symptoms are present, the vaginal discharge may be copious and grey to thin and white and may have a fishy odour. Mucosal erythema is NOT normally a feature. Vaginal samples for BV should be examined by Gram stain and for an elevated pH and the presence of clue cells and amines. Candidiasis is a true inflammatory vaginitis that presents with itch, external dysuria and introital dyspareunia usually accompanied by discharge. The discharge is more likely white and clumpy and adheres to the vaginal walls; the vaginal mucosa is visibly reddened. The major causative organism is the yeast Candida albicans. Neither BV nor candidal vaginitis is felt to be sexually transmitted.

Trichomoniasis also presents as an inflammatory vaginitis in which the discharge tends to be frothy, off-white to yellow in colour and often with erythema of the vagina and exocervix. Samples of discharge should be submitted to the laboratory for a wet mount examination, culture or NAA test. Vaginitis or vulvitis in prepubertal girls may be caused by C. trachomatis, N. gonorrhoeae or a foreign body in the vagina.