

UNIT NO. 4

SYNDROMIC APPROACH TO THE MANAGEMENT OF GENITAL ULCERS

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ABSTRACT

The main STIs which cause genital ulcerative disease include genital herpes, primary syphilis, chancroid, Granuloma inguinale, and Lymphogranuloma venereum. Genital herpes is the leading cause of genital ulcer disease worldwide. Primary syphilis is on an increasing incidence trend in Singapore, whilst Chancroid is uncommon in Singapore, but still common in parts of India and South East Asia. A diagnosis based only on the patient's medical history and physical examination frequently is inaccurate. Therefore, all patients who have genital ulcers should be evaluated with a serologic test for syphilis and a diagnostic evaluation for genital herpes. In settings where chancroid is prevalent, a test for *Haemophilus ducreyi* should also be performed. Even after complete diagnostic evaluation, at least 25% of patients who have genital ulcers have no laboratory-confirmed diagnosis.

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INTRODUCTION

This topic will focus on genital ulcers caused by Sexually Transmitted Infections (STIs). The main STIs which cause genital ulcerative disease include:

- Genital herpes
- Primary syphilis
- Chancroid
- Granuloma inguinale
- Lymphogranuloma venereum

Non STD-related aetiologies

- Non-STD infectious causes of Genital Ulcer Disease (GUD): Candidiasis/balanitis, scabies, common skin infections (e.g. Staph).
- Non-infectious causes of GUD: aphthous ulcers, Behcet's syndrome, fixed drug eruption, Reiter's syndrome, trauma/abrasions.

No aetiology is found in 20% to 50% of GUD cases, most likely related to the sensitivity of the laboratory tests (affected by self-medication, duration of lesion and technology of the test).

Genital herpes is the leading cause of genital ulcer disease worldwide. Primary syphilis is on an increasing incidence trend in Singapore, whilst Chancroid is uncommon in Singapore, but still common in parts of India and South East Asia. Granuloma inguinale (Donovanosis) is rarely seen locally, but endemic in

India, parts of South America and southern Africa. Lymphogranuloma venereum has been seen increasingly in MSM who have had sexual contacts in Northern Europe. Of significance is that GUD has been associated with an increased risk for HIV infection. Furthermore, more than one of these diseases can be present in a patient who has genital ulcers.

DIAGNOSTIC APPROACH

A. Patient history:

1. Lesion history: prodrome, initial presentation (especially presence of vesicles), duration of lesion, pain, other systemic symptoms, use of systemic or topical remedies, and any history of similar symptoms in the past or partners with similar symptoms.
2. Medical history: HIV status, skin conditions, drug allergies, and medications.
3. Sexual history: gender of partners, number of partners (new, anonymous, serodiscordant), venue for meeting partners, commercial sex exposure, partners with symptoms or signs, and partners with known HSV or recent syphilis diagnosis.
4. Travel history.

B. Physical exam:

1. Lesion: examine for appearance, distribution, number, size, induration, depth, and tenderness.
2. Genital exam: examine genital and perianal area for other lesions.
3. Lymph node(s): note number and location of enlarged nodes, size, tenderness, and presence of bubo.
4. General exam: thorough examination of oral cavity and skin of torso, palms and soles, and neurologic exam, including cranial nerves.

C. Laboratory testing

A diagnosis based only on the patient's medical history and physical examination frequently is inaccurate. Therefore, all patients who have genital ulcers should be evaluated with a serologic test for syphilis and a diagnostic evaluation for genital herpes. In settings where chancroid is prevalent, a test for *Haemophilus ducreyi* should also be performed. Specific tests for evaluation of genital ulcers include:

- syphilis serology and either darkfield examination or direct immunofluorescence test for *T. pallidum*,
- culture or PCR test for HSV, and
- culture for *H. ducreyi*.

Other useful tests in the diagnosis of genital ulcer disease include:

- *Type-specific serology testing for HSV-2*. Might be helpful in identifying persons with genital herpes.

Table 1. Clinical Features of Common Genital Ulcers

	Genital Herpes	Primary Syphilis	Chancroid
Aetiologic agent	HSV-1 & HSV-2	<i>T. pallidum</i>	<i>H. ducreyi</i>
Incubation period	2-7 days	10-90 days (avg. 21 days)	3-10 days (avg. 4-7 days)
Initial lesions	Papule & vesicle*	Papule	Papule or pustule
Presenting lesion	Vesicles	Chancre	Ulcer/buboe
Number and distribution of lesions	Multiple*, may coalesce. Bilateral in primary; unilateral in recurrent.	Usually one	Single or multiple
Diameter	1-2 mm	5-15 mm	Variable
Edges	Erythematous	Sharply demarcated, elevated, round, or oval	Undermined, ragged, irregular
Depth	Superficial	Superficial or deep	Excavated, deep
Base	Serous, erythematous, nonvascular	Smooth, non-purulent, relatively nonvascular	Necrotic, generally purulent, bleeds easily
Induration	None	Usually present	None
Pain	Common, often with prodrome of tingling*	Uncommon*	Common, severe
Lymphadenopathy	Usually present in primary infection, and absent in recurrences	Firm, non-tender, bilateral	Tender, may suppurate, usually unilateral

Source: Adapted from Ballard (in K Holmes)

*Useful in differential diagnosis

⊥ *Biopsy of genital ulcers.* Might be helpful in identifying the cause of ulcers that are unusual or that do not respond to initial therapy.

⊥ *HIV testing.* Should be performed on all patients who have genital ulcers caused by *T. pallidum* or *H. ducreyi*, and should be strongly considered for those who have genital ulcers caused by HSV.

Clinicians often have to treat patients before test results are available because early treatment decreases the possibility of ongoing transmission and because successful treatment of genital herpes depends on prompt initiation of therapy. The clinician should treat based on the most likely diagnosis, on the basis of clinical presentation and epidemiologic circumstances. In some instances, treatment must be initiated for additional conditions because of diagnostic uncertainty. Even after complete diagnostic evaluation, at least 25% of patients who have genital ulcers have no laboratory-confirmed diagnosis.

HERPES SIMPLEX VIRUS INFECTION

Definition

Genital herpes is caused by the DNA Herpes simplex virus (HSV), usually HSV type 2. However, type 1 infections are also possible. Transmission of the virus can occur through genital to genital, mouth to genital, genital to anal, and mouth to anal contact.

Clinical features

First episode genital herpes may either be primary or non-primary. Primary genital herpes is defined as infection occurring in persons with no prior exposure to either HSV 1 or 2. Non-primary genital herpes is defined as first genital episode in persons who have evidence of prior HSV infection at another body site with either HSV type 1 or 2.

First episode genital herpes is often severe, presenting with multiple grouped vesicles, which rupture easily leaving painful erosions and ulcers. In the male, the lesions occur mainly on the prepuce and sub-preputial areas of the penis; in females, on the vulva, vagina and cervix. Healing of uncomplicated lesions take 2 to 4 weeks.

Recurrent attacks are less severe than the first episode. Groups of vesicles or erosions develop on a single anatomical site, and these usually heal within 10 days. Recurrences averages 5 to 8 attacks a year and are more frequent during the first 2 years of infection. Genital herpes caused by HSV 1 generally recurs infrequently.

The majority of persons with HSV infection have mild, often unrecognised or sub-clinical disease and are unaware of the infection. They may nevertheless shed the virus intermittently in the genital tract and thus transmit the infection to their partners unknowingly.

Laboratory investigations

⊥ *Tzanck smear/test:* Demonstrates giant cells from lesions; not sensitive and only provides presumptive evidence of infection by a herpes virus.

- ⊢ *Viral isolation in cell culture:* Sensitive and specific; sensitivity declines as lesions heal; viral typing possible.
- ⊢ *HSV antigen detection:* By DFA or EIA techniques; insensitive, viral typing not possible; but economical and quick.
- ⊢ *PCR detection of viral nucleic acid:* Highest sensitivity; viral typing possible; but expensive and not widely available.
- ⊢ *Type-specific serological tests (TSST):* Based on recombinant type-specific glycoproteins gG1 (HSV 1) and gG2 (HSV 2). Good sensitivity and specificity and are useful in certain clinical situations, e.g. confirming diagnosis of genital herpes, counselling of sexual partners of infected persons, detection of unrecognised infection and for seroepidemiological studies. Examples of these tests are HerpeSelect 1 and 2 ELISA (Focus Technologies, USA) and Immunoblot test kits.

Treatment

General measures

These include cleaning of the affected areas with normal saline, the use of analgesics (e.g. lignocaine gel) when indicated and treatment of any secondary bacterial infection.

Specific therapy

Topical therapy is of limited value for genital herpes and is not indicated if systemic therapy is administered. None of these drugs eradicate the infection, nor do they influence the subsequent frequency and severity of recurrences after they have been stopped.

Recommended regimens

First episode genital herpes [Ib, A]

1. Acyclovir 400 mg orally tid for 5 to 10 days
- or
2. Valacyclovir 500 mg/1g orally bid for 5 to 10 days
- or
3. Famciclovir 250 mg orally tid for 5 to 10 days

For optimal benefit, the treatment should be started within 48 to 72 hours of onset of lesions, when new lesions continue to form or when symptoms and signs are severe (e.g. painful). The duration of treatment depends on clinical response.

Recurrent genital herpes

Most recurrent attacks are mild and can be managed with general measures/supportive therapy only. Routine use of specific treatment is not necessary. Management should be decided together with the patient.

Episodic treatment – initiate during prodrome or within 1 day of attack [Ib, A]

1. Acyclovir 400 mg orally tid *or* 800 mg orally bid for 5 days *or* 800 mg tid orally for 2 days
- or

2. Valacyclovir 500 mg orally bid *or* 1000 mg orally once a day for 5 days
- or
3. Famciclovir 125 mg orally bid for 5 days *or* 1 g bid orally for 1 day

Suppressive treatment [Ib, A]

1. Acyclovir 400 mg orally bid
- or
2. Valacyclovir 500 mg orally od
- or
3. Valacyclovir 1000 mg orally od (for > 10 recurrences in 1 year)
- or
4. Famciclovir 250 mg orally bid

Physicians should stop treatment after 9 to 12 months to see if recurrence rate warrants continued prophylaxis.

Treatment of genital herpes in HIV-infected patients [IV, C]

Recommended regimen for recurrent genital herpes

1. Acyclovir 400 mg orally tid for 7 to 10 days
- or
2. Valacyclovir 1 g orally bid for 7 to 10 days
- or
3. Famciclovir 500 mg orally bid for 7 to 10 days

Suppressive therapy

1. Acyclovir 400 mg to 800 mg orally bid or tid
- or
2. Valacyclovir 500 mg orally bid
- or
3. Famciclovir 500 mg orally bid

Follow-up

Counselling for genital herpes is important and should include:

- ⊢ Information on natural history of disease, potential for recurrent attacks, role of asymptomatic shedding in sexual transmission
- ⊢ Abstinence from sexual activity during prodromal symptoms or when lesions are present
- ⊢ Advice to inform current and new sexual partners of genital herpes
- ⊢ Use of condoms with new or uninfected partners, particularly in first 12 months after first attack
- ⊢ Information on anti-viral treatment available
- ⊢ Risk of neonatal infection: women with a history of genital herpes or whose partners have history of genital herpes should inform their obstetrician early in the pregnancy

Management of genital herpes in pregnancy

The majority of mothers of infants who acquire neonatal herpes lack histories of clinically evident genital herpes. The risk for

transmission to the neonate from an infected mother is high (30%–50%) among women who acquire genital herpes near the time of delivery, and is low (<1%) among women with histories of recurrent herpes at term or who acquire genital HSV during the first half of pregnancy. However, because recurrent genital herpes is much more common than initial HSV infection during pregnancy, the proportion of neonatal HSV infections acquired from mothers with recurrent herpes is substantial. Prevention of neonatal herpes depends both on preventing acquisition of genital HSV infection during late pregnancy and avoiding exposure of the infant to herpetic lesions during delivery.

Women without known genital herpes should be counselled to avoid intercourse during the third trimester with partners known or suspected of having genital herpes. In addition, pregnant women without known orolabial herpes should be advised to avoid receptive oral sex during the third trimester with partners known or suspected to have orolabial herpes. Some specialists believe that type-specific serologic tests are useful to identify pregnant women at risk for HSV infection and to guide counselling regarding the risk for acquiring genital herpes during pregnancy. Such testing should be offered to women without genital herpes whose sex partner has HSV infection. The effectiveness of antiviral therapy to decrease the risk for HSV transmission to pregnant women has not been studied.

All pregnant women should be asked whether they have a history of genital herpes. At the onset of labour, all women should be questioned carefully about symptoms of genital herpes, including prodromal symptoms, and all women should be examined carefully for herpetic lesions. Women without symptoms or signs of genital herpes or its prodrome can deliver vaginally. The majority of specialists recommend that women with recurrent genital herpetic lesions at the onset of labour deliver by cesarean section, to prevent neonatal herpes. However, Caesarean section does not completely eliminate the risk for HSV transmission to the infant. The risk of developing neonatal herpes with premature rupture of membranes is 10%. Expectant

management of patients in this setting with recurrent genital herpes at 31 weeks or less is recommended.

Weekly genital viral cultures for mothers with a history of anogenital herpes in the last 6 weeks of pregnancy is not recommended; it does not provide timely or accurate prediction of recurrence of viral shedding at time of delivery. Route of delivery should be based on the presence of identifiable lesions and symptoms.

Management of sexual contacts

Sexual partners of patients with genital herpes are likely to benefit from evaluation and counselling. They should be questioned on history of typical and atypical genital lesions, encouraged to examine themselves for lesions, and seek medical attention early if lesions appear. TSST may be useful in counselling couples.

SYPHILIS

Definition

Syphilis is a systemic infection caused by *Treponema pallidum*. With the exception of mother-to child transmission, syphilis is almost exclusively spread by direct contact with infectious lesions.

Clinical features

Primary Syphilis

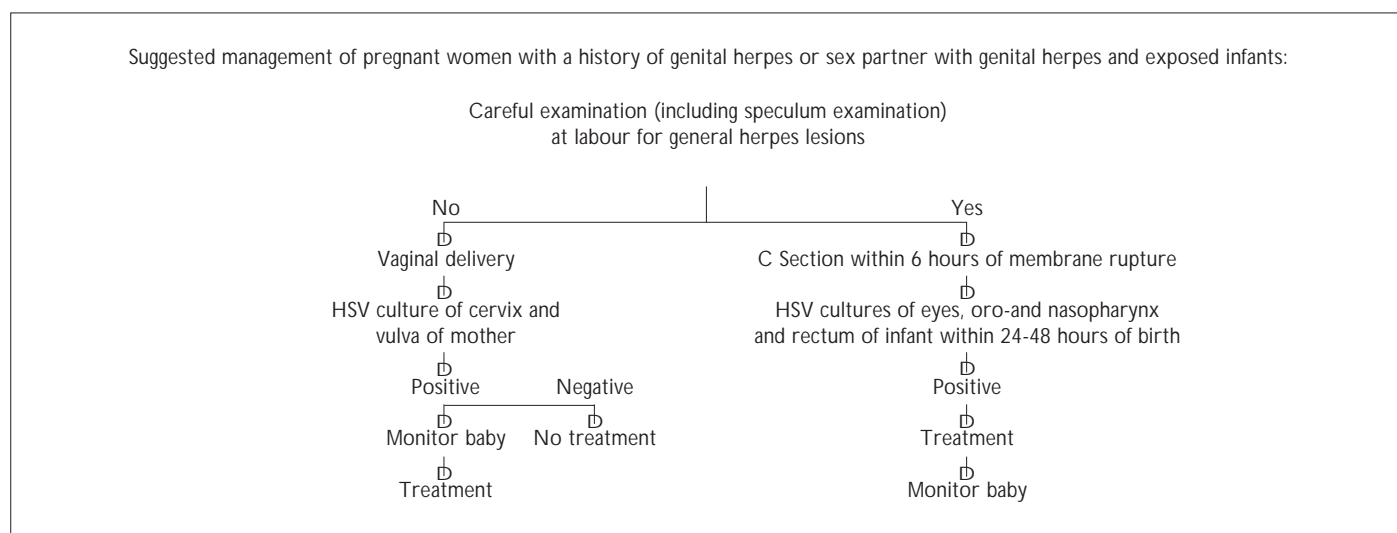
Usually occurs 2-6 weeks following infection. Characterised by a single or less often multiple, painless, indurated ulcer (chancre) at the site of inoculation. Regional lymph nodes are enlarged, feel rubbery, and are painless.

Laboratory tests

The diagnosis of syphilis may be confirmed either by:

- Darkfield microscopy to demonstrate *T. pallidum* in secretions from the primary chancre, or moist lesions of secondary syphilis
- Serological Tests

Figure 1. Management of genital herpes in pregnant women



(i) *Non-Treponemal Tests*

The **Rapid Plasma Reagin (RPR)** test and the **Venereal Disease Research Laboratory (VDRL)** tests can be used as screening tests, and are monitored serially to assess the serological response to treatment. RPR titres are slightly higher than VDRL titres. A positive VDRL/RPR test needs to be confirmed by a treponemal test. VDRL/RPR may become negative if treatment is instituted early in the disease. However, treatment of late infections often results in a persistently positive result - or a serological scar.

(ii) *Treponemal Tests*

The **Treponema Pallidum Haemagglutination Assay (TPHA)**, **Treponema Pallidum Particle Agglutination (TPPA)** test, the **Line Immunoassay (LIA)**, the **Fluorescent Treponomal Antibody Absorption (FTA-Abs) test**, Rapid diagnostic tests (e.g. **Abbott Determine Syphilis TP**), and the **treponemal EIA test** are specific and can be used as screening tests. A positive result may need to be confirmed by another specific test.

Once positive, specific tests tend to remain positive, even after the syphilis has been successfully treated. The titres of treponemal tests are not useful in monitoring treatment response. The FTA-Abs test is the first test to become positive following infection, it is followed by the VDRL/RPR test, and then by the TPHA/TPPA test.

In primary syphilis, 85-90% of cases will have a reactive FTA-Abs test, but only 60% will have a reactive TPHA/TPPA. The FTA-Abs test is no longer routinely offered by most laboratories in Singapore. The syphilis LIA test for both IgM and IgG can be done as an alternative confirmatory test, as well as to detect cases of early syphilis.

Most cases of syphilis in HIV-infected persons will demonstrate typical serological responses. However, there may be instances of an altered serological response (abnormally high, low or fluctuating titres). When clinical signs are suggestive of syphilis but serological tests are negative, alternative tests should be used, e.g. biopsy, DG examination, and DIF staining of lesions.

Treatment*Primary Syphilis*Recommended regimens

1. Benzathine Penicillin G 2.4 million units i/m weekly x single dose

(For primary syphilis, most authorities administer a single dose, while some might use two doses for secondary syphilis) [III, B] or

2. Aq. Procaine Penicillin G 600,000 units i/m daily x 10 days [III, B]

Penicillin-allergic patients

1. Doxycycline 100 mg orally bid x 14 days [III, B]

or

2. Tetracycline 500 mg orally qid x 14 days [III, B]

or

3. Erythromycin 500 mg orally qid x 14 days [III, B]

or

4. Azithromycin 500 mg orally od x 10 days [IV, C]

or

5. Ceftriaxone 500 mg i/m od x 10 days [IV, C] (limited data only; note possible cross reaction with penicillin)

For HIV-infected individuals, we recommend 3 doses of Benzathine Penicillin G 2.4 million units i/m to be given weekly (*see section on infection in HIV infected individuals*) [IV, C].

Doxycycline is the preferred oral alternative in view of its more favourable dosing intervals.

Oral corticosteroid cover

This is to minimise the effects of the Jarisch-Herxheimer reaction that may occur 4 to 12 hours after the first dose of antibiotic therapy and is indicated in the following situations where the reaction may result in morbidity or even mortality:

1. Laryngeal gumma
2. Cardiovascular syphilis
3. Neurosyphilis

Recommended regimen

Prednisolone orally 20 mg tid (60mg/day) for 24 hours before treatment and continued for 2 days after starting therapy [IV, C].

Follow up

Quantitative nontreponemal tests should be repeated for a total period of two years (at 3 months; 6 months; 12 months; 18 months; 24 months). Following treatment of early syphilis, VDRL/RPR should demonstrate a 4 x (2 dilutions) decrease in titre within 6 months. Failure to do so probably means treatment failure, and is an indication for retreatment with 3 injections of Benzathine penicillin. Some experts recommend CSF examination.

Clinical signs that persist or recur, or a rising VDRL/RPR titre of 4 x or more, suggests either reinfection or relapse. In these situations, CSF examination is recommended before retreatment. Seroreversion in primary syphilis often occurs within 12 months. It may take a longer time for secondary and early latent syphilis, but usually occurs within 24 months.

Serologic tests for HIV should be performed 3 months after the last risky exposure.

Management of sexual contacts

At risk partners are those who have been exposed within the following periods – 3 months plus duration of symptoms for primary syphilis. Epidemiologic treatment should be given to sexual contacts who were exposed 3 months prior to the diagnosis of primary syphilis if follow-up is uncertain.

Epidemiologic treatment can be given as followed:

1. Benzathine Penicillin G 2.4 million units i/m weekly x single dose [III, B]
or
2. Doxycycline 100 mg orally bid x 14 days [III, B]
or
3. Azithromycin 1 g orally stat [III, B]

Syphilis in pregnancy

Penicillin should be used in dosage schedules appropriate for the stage of syphilis as recommended for the treatment of non-pregnant patients.

For penicillin-allergic patients, give erythromycin in dosage schedules appropriate for the stage of syphilis as recommended for the treatment of non-pregnant patients. However, as erythromycin exhibits poor penetration across the placental barrier, the infant should be routinely treated with penicillin at birth. For these patients, retreatment with doxycycline can be considered after delivery when breastfeeding has been stopped.

Ceftriaxone 500 mg i/m od x 10 days and Azithromycin 500 mg orally od x 10 days (limited data only) have been tried.

Tetracyclines are contraindicated in pregnancy. Pregnant woman treated for early syphilis should have monthly RPR/VDRL for the remainder of the current pregnancy.

Retreatment

Best to refer to a specialist.

Indications:

- Clinical signs and symptoms of syphilis persist or recur (clinical relapse)
- Four-fold or greater rise in VDRL/RPR titre, e.g. from R4 to R16 (serological relapse)
- Initial high VDRL/RPR titre, e.g. R32 or greater persists for a year (sero-fast)
- Failure of VDRL/RPR titre to decrease four-fold after a year for treated early syphilis
- For pregnant women treated for early syphilis, the failure to show a four-fold decrease in
- VDRL/RPR titre after 3 months.

CHANCROID

Definition

Chancroid is a sexually transmitted infection caused by the bacterium *Haemophilus ducreyi*. Patients infected may have a co-infection with syphilis or herpes.

Clinical features

The infection presents with one or more painful genital ulcers with a purulent base. The ulcers are usually foul-smelling and appear after an incubation period of 3-14 days. Associated suppurative inguinal lymphadenopathy (bubo) is common. Scarring may result despite successful therapy.

Laboratory tests

- direct microscopy of smear from ulcer showing Gram-negative coccobacilli (arranged in “shoals of fish” pattern),
- culture for *H. ducreyi* of smear from ulcer or aspirate from buboes (sensitivity <80%),
- diagnosis is often based on typical clinical presentation and after exclusion of syphilis and HSV infection,
- PCR detection.

Treatment

Local treatment

- saline wash, and
- aspiration of fluctuant buboes from adjacent normal skin.

Systemic treatment

Recommended regimens

1. Ceftriaxone 250 mg i/m single dose [Ib, B]
or
2. Azithromycin 1 g orally single dose [Ib, A]

Alternative regimens

1. Ciprofloxacin 500 mg orally bid x 3 days [Ib, B]
or
2. Erythromycin base or stearate 500 mg orally qid x 7 days [Ib, B]
or
3. Co-trimoxazole (trimethoprim/sulfamethoxazole) 160/800 mg (2 tabs) orally bid x 7 days

Not recommended

Tetracyclines and Ampicillin

Other management considerations

Patients who are uncircumcised and patients with HIV infection do not respond as well to treatment as those who are circumcised or HIV-negative. Patients should be tested for HIV infection at the time chancroid is diagnosed. Patients should be retested for syphilis and HIV 3 months after the diagnosis of chancroid if the initial test results were negative.

Follow up

Chancroid ulcers usually begin to heal within 3 days of treatment and should heal completely by 7-14 days. Inguinal lymphadenopathy will take a longer time to resolve. If there is no improvement by 7 days, the patient should be re-evaluated for:

- compliance with medication,
- co-infection with another STI,
- co-infection with HIV,
- on-STI ulcer disease, and
- resistant organism.

Management of sexual contacts

Sex partners should be screened and treated when indicated if they had sexual contact with the patient 10 days before patient's onset of symptoms.

Special considerations

Pregnancy

Ciprofloxacin is contraindicated during pregnancy and lactation. No adverse effects of chancroid on pregnancy outcome have been reported so far.

HIV Infection

HIV-infected patients who have chancroid should be monitored closely because, as a group, these patients are more likely to experience treatment failure and to have ulcers that heal more slowly. HIV-infected patients may require longer courses of therapy than those recommended for HIV-negative patients, and treatment failures can occur with any regimen.

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Figure 2. APPROACH TO THE DIAGNOSIS OF GENITAL ULCERS

		Differential Diagnoses	Incubation Period	Ulcer Appearance	Lymph Nodes	Laboratory Tests
Is pain present	No	o chancre	o 21 days (9-90 days) o clean-based o bilateral	o indurated o discrete o TPPA	o rubbery o VDRL	o darkground
		o carcinoma (elderly males)	o long	o fungating infiltrative	o firm to hard	o Biopsy
		o lympho-granuloma venereum LGV)	o 1-5 days (1-35 days)	o non-indurated symptom)	o bubo (presenting	
		Differential Diagnoses	Incubation Period	Ulcer Appearance	Lymph Nodes	Laboratory Tests
Yes	No. of ulcers					
	Single	o chancroid	o 1-5 days (1-30 days)	o undermined edges o purulent o soft	o tender o matted o unilateral	o chancroid culture (high false negative)
		o Infected chnacre	o 21 days (9-90 days)	o indurated	o rubbery o discrete o bilateral	o darkground o VDRL o TPPA
		Differential Diagnoses	Incubation Period	Ulcer Appearance	Lymph Nodes	Laboratory Tests
Multiple		o chancroid	o 1-5 days (1-30 days) o purulent o unilateral	o undermined edges o matted	o tender	o chancroid culture
		o herpes genitalis	o 2-5 days (<7 days)	o grouped or coalesced o small erosions	o tender o bilateral	o herpes culture o Tzanck test o PCR

LEARNING POINTS

- o HIV testing should be performed on all patients who have genital ulcers caused by *T. pallidum* or *H. ducreyi*, and should be strongly considered for those who have genital ulcers caused by HSV.
 - o First episode genital herpes is often severe, presenting with multiple grouped vesicles, which rupture easily leaving painful erosions and ulcers.
 - o Prevention of neonatal herpes depends both on preventing acquisition of genital HSV infection during late pregnancy and avoiding exposure of the infant to herpetic lesions during delivery.
 - o Primary syphilis usually occurs 2-6 weeks following infection, characterised by a single or less often multiple, painless, indurated ulcer (chancre) at the site of inoculation.
 - o In primary syphilis, 85-90% of cases will have a reactive FTA-Abs test, but only 60% will have a reactive TPHA/TPPA.
 - o Chancroid infection presents with one or more painful genital ulcers with a purulent base. The ulcers are usually foul-smelling and appear after an incubation period of 3-14 days.
 - o Patients should be retested for syphilis and HIV 3 months after the diagnosis of chancroid if the initial test results were negative.
-