

## A SYNDROMIC APPROACH TO THE MANAGEMENT OF GENITAL ULCERS

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### ABSTRACT

**Genital ulcer disease is a common presentation of sexually transmitted infections (STIs) and can cause significant morbidity in patients. Syphilis (chancre of primary syphilis) and genital herpes are the two most significant ulcerative STIs and are occasionally indistinguishable clinically. Infectious syphilis is on the rise in Singapore particularly in men who have sex with men (MSM); whilst genital herpes although showing a decreasing incidence in recent years still presents with more than 500 notifications a year as first episode genital herpes. Due to the breaks in the mucosa of the skin caused by the ulcers, the risk of acquisition as well as transmission of HIV infection are both increased making timely treatment of genital ulcers of utmost importance. Although uncommon in Singapore, chancroid, LGV and granuloma inguinale remain endemic in some parts of Asia and there should be a high index of suspicion for patients who have returned from these regions presenting with ulcerative lesions. All patients who present with genital ulcers should have their blood tested for syphilis and HIV as well as a swab for culture or PCR testing taken from the ulcer to exclude genital herpes.**

#### Keywords:

**genital ulcer disease, sexually transmitted infection, syndromic management**

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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 (GUD) include:

1. Genital herpes
2. Primary syphilis
3. Chancroid
4. Granuloma inguinale
5. Lymphogranuloma venereum

#### Non STD-related aetiologies

1. Non-STI infectious causes of GUD: Candidiasis/balanitis, scabies, common skin infections (e.g. Staph).
2. 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.

Genital herpes is the leading cause of GUD worldwide. Primary syphilis is on an increasing incidence trend 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 associated with MSM and overseas acquisition. Most importantly, GUD has been associated with an increased risk for both acquisition and transmission of HIV infection.

### DIAGNOSTIC APPROACH

The following diagnostic approach (See also Figure 1) is recommended when a patient presents with a genital ulcer(s):

#### A. Patient history

1. Lesion history: prodrome, initial presentation (especially presence of vesicles), duration of lesion, pain, symptoms of urethritis, other systemic symptoms, use of systemic or topical remedies, any history of similar symptoms in the past or partners with similar symptoms.
2. Medical history: HIV status, skin conditions, drug allergies, 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, partners with known HSV or recent syphilis diagnosis.
4. Travel history: geographical area where sexual intercourse has taken place.

#### 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, presence of bubo.
4. General exam: thorough examination of oral cavity and skin of torso, palms and soles. In patients with syphilis include an examination of the cardiovascular and neurological systems.

#### C. Laboratory Testing

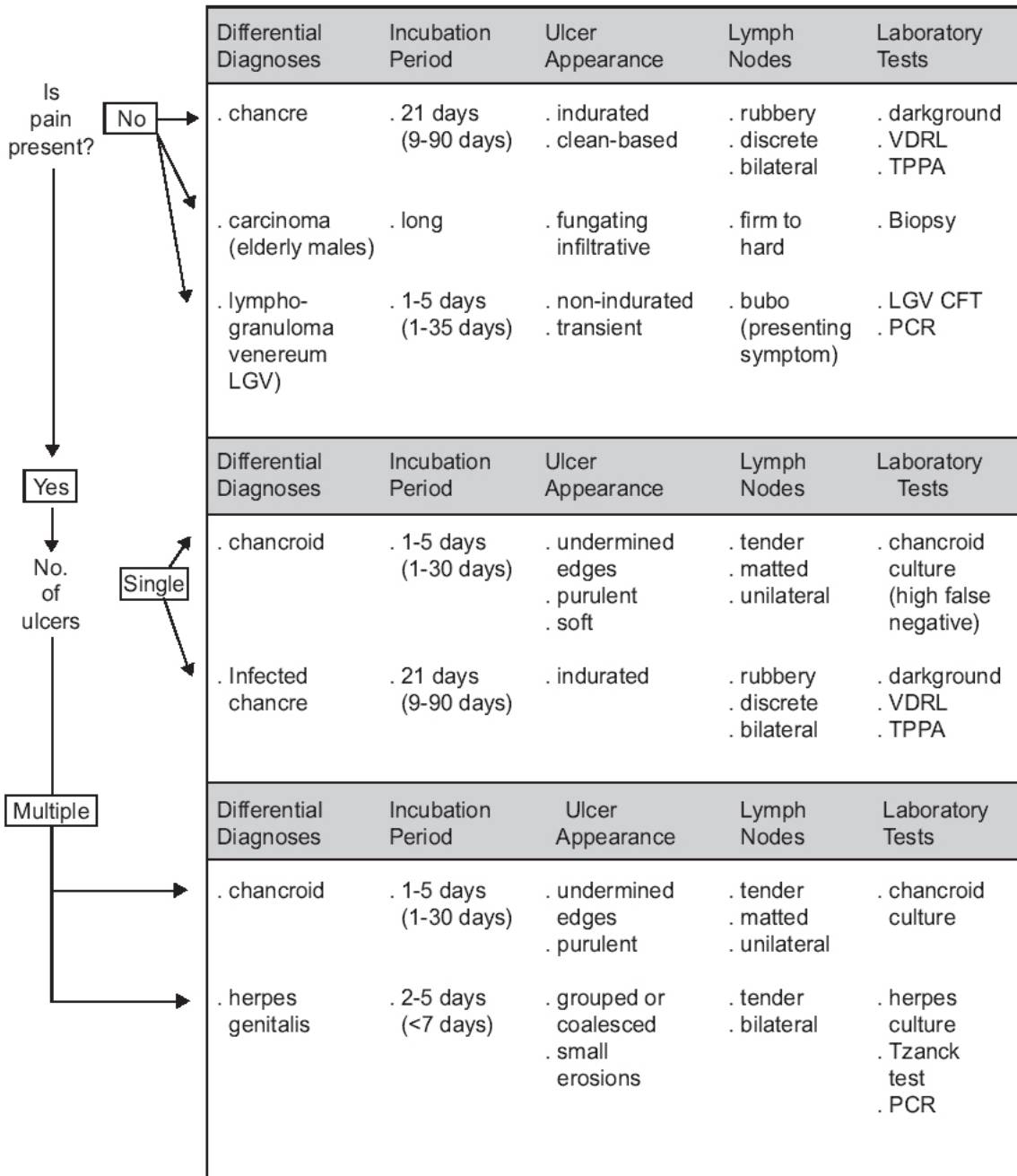
A diagnosis based only on the patient's medical history and physical examination frequently is inaccurate. Therefore, all patients who have genital ulcers should be evaluated with a serologic test for syphilis and a diagnostic evaluation for genital herpes. If chancroid is suspected (patient travel history to endemic areas) the patient should be referred to a specialist for evaluation and a test for *Haemophilus ducreyi*.

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**FIGURE 1: APPROACH TO THE DIAGNOSIS OF GENITAL ULCERS**



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

**Adapted from Ballard (in K Holmes)**

\*Useful in differential diagnosis

Specific tests for evaluation of genital ulcers include:

1. Syphilis serology and either darkfield examination or direct immunofluorescence test for *T. pallidum*;
2. Culture or PCR test for HSV; and
3. Culture for *H. ducreyi*.

Other useful tests in the diagnosis of GUD include:

1. Type-specific serology testing for HSV-2 might be helpful in identifying persons with genital herpes
2. Biopsy of genital ulcers might be helpful in identifying the cause of ulcers that are unusual or that do not respond to initial therapy
3. HIV testing should be performed on all patients who have genital ulcers caused by *T. pallidum*, HSV or *H. ducreyi*

Clinicians often have to treat patients before test results are available because early treatment decreases the possibility of ongoing transmission and successful treatment of genital herpes depends on prompt initiation of therapy. The clinician should treat for the diagnosis considered most likely, 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.

Patients should be educated and counselled on their condition as well as safer sex.

## HERPES SIMPLEX VIRUS INFECTION

### Definition

Genital herpes is a chronic, life-long viral infection caused by the DNA Herpes simplex virus (HSV), usually HSV type 2, but 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 type 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 takes 2 to 4 weeks. Complications may include autonomic neuropathy, resulting in urinary retention, autoinoculation to fingers and adjacent skin and aseptic meningitis.

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 average 5 to 8 attacks a year and are more frequent during the first 2 years of infection. Genital herpes caused by HSV type 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 (asymptomatic carriers). They may nevertheless shed the virus intermittently in the genital tract and thus transmit the infection to their partners unknowingly.

A patient's prognosis and the type of counselling needed depends on the type of genital herpes (HSV-1 or HSV-2) causing the infection; therefore, the clinical diagnosis of genital herpes should be confirmed by laboratory testing.

### Laboratory investigations

#### Viral isolation in cell culture

This is considered the 'Gold standard'. The test is both sensitive and specific, but sensitivity declines as lesions heal; viral typing is possible.

#### HSV antigen detection

By Direct Immunofluorescence techniques. Results may be available in 1 to 2 days. HSV type is reported if the test is positive.

#### PCR detection of viral nucleic acid

Highest sensitivity; viral typing possible; but expensive and not widely available. Test of choice for detecting HSV in spinal fluid.

### Serology

Many commercial tests for HSV antibodies are not type specific and are of no value in the management of genital herpes.

### Type-specific serological tests (TSSTs)

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 a diagnosis of genital herpes, counselling of sexual partners of infected persons, detection of unrecognised infection and for seroepidemiological studies. TSSTs are also useful in high risk populations such as MSM, individuals with multiple sex partners and HIV positive individuals. Screening for HSV-1 and HSV-2 in the general population is not indicated. Examples of these tests are HerpeSelect 1 and 2 ELISA (Focus Technologies, USA) and Immunoblot test kits. As nearly all HSV-2 infections are sexually acquired, the presence of type-specific HSV-2 antibody implies anogenital infection. Most persons with HSV-1 antibodies have oral HSV infection acquired during childhood, which might be asymptomatic. The presence of HSV-1 antibody does not distinguish anogenital from orolabial infection.

### **Treatment of herpes simplex infection**

#### *General measures*

- Cleaning of the affected areas with normal saline
- Analgesia
- Treatment of any secondary bacterial infection.

#### *Specific therapy*

- Systemic antiviral drugs can partially control the signs and symptoms of herpes episodes when used to treat first clinical and recurrent episodes, or when used as daily suppressive therapy. However, these drugs neither eradicate latent virus nor affect the risk, frequency, or severity of recurrences after the drug is discontinued.
- Topical therapy is of limited value for genital herpes and is not indicated if systemic therapy is administered.

#### *Recommended regimens*

#### First episode genital herpes (Ib, A)

Acyclovir 400mg orally tid x 7 - 10 days

or

Valacyclovir 1g orally bid x 7 - 10 days

or

Famciclovir 250mg orally tid x 7 - 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. Treatment can be extended if healing is incomplete after 10 days of therapy.

#### **Recurrent genital herpes**

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

Effective episodic treatment of recurrent herpes requires initiation of therapy within 1 day of lesion onset or during the prodrome that precedes some outbreaks. The patient should be provided with a supply of drug or a prescription for the medication with instructions to initiate treatment immediately when symptoms begin.

**Episodic treatment (Ib, A)**

- Acyclovir 400mg orally tid x 5 days
- or
- Acyclovir 800mg orally bid x 5 days
- or
- Acyclovir 800mg tid x 2 days
- or
- Valacyclovir 500mg orally bid x 3 days
- or
- Valacyclovir 1g orally once a day x 5 days
- or
- Famciclovir 125mg orally bid x 5 days
- or
- Famciclovir 1g bid x 1 day

Suppressive therapy reduces the frequency of genital herpes recurrences and may be considered in patients who have frequent recurrences (i.e. 6 or more recurrences per year). Suppressive therapy has the additional advantage of decreasing the risk for genital HSV-2 transmission to susceptible partners.

**Suppressive treatment (Ib, A)**

- Acyclovir 400mg orally bid
- or
- Valacyclovir 500mg orally od
- or
- Valacyclovir 1000mg orally od (for ≥10 recurrences in 1 year)
- or
- Famciclovir 250mg orally bid

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

**Treatment of genital herpes in HIV-infected patients**

Genital herpes is common in HIV infected individuals. Acyclovir-resistant strains, which usually lack the thymidine kinase enzyme, have been reported in patients with concurrent HIV infection. Acyclovir-resistant strains will also be resistant to valacyclovir and famciclovir. IV foscarnet, topical cidofovir or trifluridine may be used to treat resistant strains.

**Recurrent treatment (IV, C)**

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

**Suppressive treatment (IV, C)**

- Acyclovir 400 - 800mg orally bid or tid or qid
- or

- Valacyclovir 500mg orally bid
- or
- Famciclovir 500mg orally bid

**Counselling of infected persons and their sexual partners**

Counselling of infected persons and their sex partners is critical to the management of genital herpes. The goals of counselling are to help patients cope with the infection and prevent sexual and perinatal transmission.

The following should be discussed:

- Information on the natural history of the 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 the first 12 months after the first attack
- Sexual relationships and transmission to partners
- Information on anti-viral treatment available
- Ability to bear healthy children
- Risk of neonatal infection: women with a history of genital herpes or whose partners have a history of genital herpes should inform their obstetrician early in pregnancy
- The misconception that HSV causes cancer should be dispelled.

**Management of genital herpes in pregnancy**

Transmission of genital herpes to neonates is most likely to occur when the mother has an attack of symptomatic herpes at the time of delivery. The risk of transmission to neonate is highest (30-50%) from a mother with primary genital herpes at the time of delivery; it is much lower (<1%) for mothers with recurrent herpes or asymptomatic viral shedding.

The safety of systemic acyclovir, valacyclovir and famciclovir during pregnancy is not yet established (all US FDA class B). Current findings do not show an increased risk for major birth defects after acyclovir treatment in the first trimester. First episode or severe recurrent genital herpes in pregnancy may be treated with oral acyclovir. In the presence of life-threatening maternal HSV infection, IV acyclovir is indicated.

**First episode genital herpes - 1st and 2nd trimester acquisition**

Management should be in line with the clinical condition with the use of either oral or intravenous acyclovir. Vaginal delivery is anticipated in women who present with first episode genital herpes in the first and second trimesters as the risk for transmission to the neonate at delivery is low.

**First episode genital herpes – 3rd trimester acquisition**

Caesarean section should be offered to all women presenting with first-episode genital herpes lesions at the time of delivery, or within 6 weeks of the expected date of delivery or onset of labour

(IV,C).

### **Recurrent genital herpes in pregnancy**

If there are no genital lesions at the onset of labour, Caesarean section to prevent neonatal herpes is not indicated (IV,C). For women with a history of recurrent genital herpes, who would opt for caesarean delivery if HSV lesions were detected at the onset of labour, daily suppressive acyclovir given from 36 weeks of gestation until delivery may be given to reduce the likelihood of HSV lesions at term (Ia, A)

### **Management of sexual contacts of patients with genital herpes**

Sexual partners of patients with genital herpes are likely to benefit from evaluation and counselling. They should be questioned on a history of typical and atypical genital lesions, encouraged to examine themselves for lesions and seek medical attention early if lesions appear. TSSTs 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. Characterized 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 primary syphilis may be confirmed either by

- Darkfield microscopy to demonstrate *T. pallidum* in secretions from the primary chancre.

#### **Serological Tests**

##### ***i. Non-Treponemal Tests***

The Rapid Plasma Reagin (RPR) test and the Venereal Disease Research Laboratory (VDRL) tests 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 Treponemal 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.

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 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. There is evidence that the syphilis EIA test is also useful for detecting early infections. 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).

### **Treatment**

Parenteral penicillin G (aqueous crystalline, aqueous procaine, or benzathine) is the drug of choice for treating all stages of syphilis. If the patient is allergic to penicillin, tetracycline, doxycycline, azithromycin and erythromycin are the alternatives. However, they do not have the established and well-evaluated high rate of success of penicillin.

### **Recommended Regimens for primary syphilis**

1. Benzathine Penicillin G 2.4 million units i/m weekly x single dose [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 low risk of possible cross reaction with penicillin).

For HIV-infected individuals, the same treatment regimens as those who are HIV negative are recommended [IV, C].

### **Oral corticosteroid cover**

This is to minimize the effects of the Jarisch-Herxheimer reaction that may occur 4 to 12 hours after the first dose of antibiotic therapy. 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 of patients treated for syphilis**

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

**Management of sexual contacts of patients with syphilis**

At risk partners are those who have been exposed within 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 follows

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]

**Primary Syphilis in pregnancy**

Penicillin should be used in dosage schedules recommended for primary syphilis in non-pregnant patients. A Jarisch-Herxheimer reaction may precipitate premature labour or foetal distress; women should be advised to seek obstetric care if abnormal contractions and decreased foetal movements occur.

For penicillin-allergic patients, give erythromycin in dosage schedules appropriate for primary 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.

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

**CHANCROID**

**Definition**

Chancroid is a sexually transmitted infection caused by the bacterium *Haemophilus ducreyi*. This infection is uncommon in Singapore, but still common in parts of India and South East Asia. Patients infected may have a co-infection with syphilis or herpes.

**Clinical features**

Infection with *H. ducreyi* may present with an erythematous papule that rapidly progresses into a pustule, which erodes into an ulcer. Infected persons may have more than one ulcer, and the lesions are almost always confined to the genital area and its draining lymph nodes. A typical chancroid ulcer is about 1 to 2 cm in diameter, but the size is variable, especially in HIV-infected patients. The ulcer is painful and has an erythematous base; the borders are clearly demarcated and sometimes undermined. The base of the ulcer is usually covered with a grey or yellow purulent exudate and bleeds when scraped. The most common sites for chancroid are the prepuce, corona, or glans penis in men, and the labia, vaginal introitus, and perianal areas in women. Some cases of chancroid may go undiagnosed, especially in asymptomatic women with vaginal or cervical lesions.

The involved nodes may undergo liquefaction and present as fluctuant buboes. Most buboes arise one to two weeks after the appearance of the primary ulcer and are often quite painful. Untreated buboes may spontaneously rupture and discharge frank pus. Scarring may result despite successful therapy.

**Laboratory tests**

- Direct microscopy of a smear from ulcer showing Gram-negative coccobacilli (arranged in “shoals of fish” pattern)
- Culture for *H. ducreyi* of a smear from ulcer or aspirate from buboes (sensitivity <80%)
- Diagnosis is often based on a typical clinical presentation and after exclusion of syphilis and HSV infection
- Multiplex PCR detection (>95%)

**Treatment**

**Local Treatment**

- Saline wash
- 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
- Non-STI ulcer disease
- Resistant organism

The response of chancroid-associated lymphadenitis may occur more slowly. In advanced cases, scarring may result despite eradication of infection.

#### Management of sexual contacts of patients with chancroid

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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#### LEARNING POINTS

- **Timely treatment of genital ulcers is of utmost importance.**
  - **All patients who present with genital ulcers should have their blood tested for syphilis and HIV as well as a swab for culture or PCR testing taken from the ulcer to exclude genital herpes.**
  - **Syphilis (chancre of primary syphilis) and genital herpes are the two most significant ulcerative STIs and are occasionally indistinguishable clinically.**
  - **Infectious syphilis is on the rise in Singapore particularly in men who have sex with men (MSM)**
  - **Genital herpes although showing a decreasing incidence in recent years still presents with more than 500 notifications a year as first episode genital herpes.**
  - **Chancroid, lymphogranuloma venereum (LGV) and granuloma inguinale remain endemic in some parts of Asia and there should be a high index of suspicion for patients who have returned from these regions presenting with ulcerative lesions.**
-