



# Chancroid

## Learning Objectives

Upon completion of this module, the learner will be able to:

1. Describe the etiology and epidemiology of chancroid.
2. Describe the clinical presentation and diagnosis of chancroid (including laboratory methods).
3. List conditions and lesions commonly included in the differential diagnosis of chancroid.
4. State the current treatment recommendations for chancroid.
5. Summarize the relationship between chancroid and HIV infection.

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## Chancroid

An acute infection manifested by deep genital ulceration and by the frequent occurrence of inguinal adenopathy and bubo formation. The etiologic agent is *Haemophilus ducreyi*; a Gram-negative coccobacillus.

### I. Epidemiology

- A. Transmission: exclusively via sexual contact.
- B. Incubation period: 3-10 days.
- C. High-risk patient populations:
  - 1. Lower socioeconomic groups.
  - 2. Commercial sex workers.
  - 3. Uncircumcised men.
  - 4. Males > females.
- D. Cofactors: as with all STDs, chancroid frequently coexists with other STDs. Chancroid is a risk factor for acquisition of or transmission of the human immunodeficiency virus (HIV).
- E. Prevalence and incidence: very low incidence in the U.S. Previous endemic and epidemic occurrence in New York City, New Orleans, Florida, Texas.
- F. Most current cases are acquired from foreign sources.

### II. Pathogenesis

- A. Causative organism, *H. ducreyi*, is a small facultative anaerobe that requires hemin (X-factor) for growth.
- B. Histology:
  - 1. Superficial layer of necrotic tissue, neutrophils, and organisms.
  - 2. Edema and neovascularization.
  - 3. Dense infiltrate of neutrophils, plasma cells, and leukocytes.
- C. Lymphadenopathy bubo formation results from a pyogenic inflammatory response with neutrophils but few bacilli.

### III. Clinical Manifestations

#### A. Presentation:

1. Males: ulcer/inguinal swelling or pain, rarely as urethral discharge, bubo formation.
2. Females: dysuria, pain, bleeding, vaginal discharge, vulvo-vaginal ulcers.
3. Systemic symptoms generally absent.

#### B. Differential diagnosis:

1. Syphilis: singular hypoesthetic clean ulcer.
2. Genital herpes.
  - a) Painful.
  - b) Usually multiple.
  - c) Immunocompromised patients (ulcers large and necrotic).
3. Lymphogranuloma venereum: tender bubo but primary lesion not distinctive.
4. Other:
  - a) Behcet's disease
  - b) Aphthosis major.
  - c) Trauma.

#### C. The ulcer:

1. Single or multiple.
2. Begins as a papule, which ulcerates within 24 hours.
3. Typically "soft", i.e., not indurated vs. indurated ulcer in syphilis.
4. Usually painful vs. generally painless ulcer in syphilis.
5. Generally has ragged borders with undetermined edges that are deep, punched out, and have a necrotic base.
6. Ulcer base is generally purulent.

7. Can resolve spontaneously or lesions may enlarge and coalesce; they can go on to become destructive lesions.
- D. Lymphadenopathy: often (40-50%) but not always present; may occur after ulcer resolves.
- E. The bubo:
1. Suppurative, tender lymphadenopathy vs. non-tender, “rubbery” nodes in syphilis.
  2. Can occur at any time after infection, even after successful treatment of the ulcer.
  3. Often a sterile abscess.
  4. May last 1-3 weeks or longer.
- F. Complications:
1. Destructive ulcers.
  2. Bubo rupture; fistula formation, scarring with phimosis.
  3. Autoinoculation from infected pus.

#### **IV. Diagnosis**

- A. Clinical presentation: presence of bubo in association with painful genital ulcers strongly suggest a diagnosis of chancroid.
- B. Diagnostic tests:
1. Gram-stain (“railroad ties”: short Gram-negative rods); sensitivity low; requires experienced microscopist.
  2. Selective media for culture is the gold standard. It may have a sensitivity of 40-80% and is not commercially available.
  3. Serology: not useful for diagnosis in individual cases.
  4. PCR: not available.

- C. Other considerations: perform darkfield microscopy to rule out syphilis and an appropriate test for HSV.
- D. Specimen collection: a sterile swab is rolled across the base of a genital ulcer. Crusting and excess pus should be wiped away, which may precipitate bleeding.

## V. Treatment

### A. Recommended treatment:

1. Azithromycin, 1 gm po once.
2. Ceftriaxone, 250 mg IM once.
3. Ciprofloxacin, 500 mg po b.i.d. x 3 days.
4. Erythromycin base, 500 mg po t.i.d. x 7 days. Buboos may require drainage by aspiration if large or painful, or for diagnostic purposes. Note that buboes may appear to worsen in the 1-2 days following therapy. Buboos may need additional antibiotic therapy for resolution.

### B. Follow-up:

1. Re-examine in 3-5 days for evidence of symptomatic improvement.
2. Re-examine in 7-10 days for evidence of clinical improvement, and then weekly until healed.
3. Repeat HIV and syphilis test at 3 months, if initially negative.

### C. HIV infection: patients co-infected with HIV should be closely monitored. These patients may require courses of therapy longer than those recommended in this report.

## VI. Prevention

- A. Partner management: sex partners of patients who have chancroid should be examined and treated, regardless of whether symptoms of the disease are present, if they had sexual contact with the patient during the 10 days preceding onset of symptoms in the patient.

B. Reporting: report cases to the local STD program in states where reporting is mandated.

C. Patient counseling and education:

Risk reduction:

1. Assess client's behavior-change potential.
2. Discuss prevention strategies (abstinence, monogamy, condoms, limit number of sex partners, etc.). Genital ulcer diseases can occur in both male and female genital areas that are covered or protected by a latex condom, as well as in areas that are not covered. Correct and consistent use of latex condoms can reduce the risk of chancroid only when the infected area or site of potential exposure is protected.
3. Develop individualized risk-reduction plans.
4. A vaccine candidate has been evaluated in a swine model.

## VII. References

### Vaccines

1. Afonina G, Leduc I, Nepluev I, Jeter C, Routh P, Almond G, Orndorff PE, Hobbs M, Elkins C. Immunization with the *Haemophilus ducreyi* hemoglobin receptor HgbA protects against infection in the swine model of chancroid. *Infect Immun* 2006; 74(4):2224-2232.
2. Roy-Leon JE, Lauzon WD, Toye B, Singhal N, Cameron DW. In vitro and in vivo activity of combination antimicrobial agents on *Haemophilus ducreyi*. *J Antimicrob Chemother* 2005; 56(3):552-558.

### Other references

3. Wu JJ, Huang DB, Pang KR, Tyring SK. Selected sexually transmitted diseases and their relationship to HIV. *Clin Dermatol* 2004; 22(6):499-508.
4. Centers for Disease Control and Prevention. Chancroid. In 1998 Sexually transmitted diseases treatment guidelines. *MMWR* 2002; 51(No. RR-6):1-78.
5. Holmes KK, Mardh PA, Sparling PF, Weisner PJ, eds. Chapters 38 and 92. In *Sexually transmitted diseases*, 3<sup>rd</sup> ed. New York: McGraw-Hill, Inc., 1999.
6. Lever WF, Schaumburg-Lever G. Chancroid. In *Histopathology of the skin*, 7<sup>th</sup> ed. Philadelphia: J.B. Lippincott, 1990:340-341.
7. Malonza IM, Tyndall MW, Ndinya-Achola JO, et al. A randomized, double-blind, placebo-controlled trial of single-dose ciprofloxacin versus erythromycin for the treatment of chancroid in Nairobi, Kenya. *J Infect Dis* 1999; 180(6):1886-1893.
8. Ronald AR, Plummer FA. Chancroid and *Haemophilus ducreyi*. *Ann Int Med* 1983; 102(5):705-707.
9. Schmid GP, Sanders LL, Blount JH, Alexander ER. Chancroid in the United States: reestablishment of an old disease. *J Am Med Assoc* 1987; 258(22):3265-3268.
10. Wentworth BB, Judson FN, Gilchrist MJR, eds. Chapter 9. In *Laboratory methods for the diagnosis of sexually transmitted diseases*, 2<sup>nd</sup> edition. American Public Health Association, 1991.