
USMLE Step 1

Microbiology

Q1

A 30-year old sexually active man presents with a painful vesicle on his external genitalia and bilateral inguinal lymphadenopathy. A Tzack smear from the vesicle fails is negative, and polymerase chain reaction analysis of viral DNA is negative. A VDRL assay is also negative. Which of the following medications would be most helpful to this patient?

- A, Acyclovir
 - B, Erythromycin
 - C, Foscarnet
 - D, Ribavirin
 - E, Vancomycin
-

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Q1

Differential diagnosis

1. Primary syphilis
 2. Genital herpes
 3. Chancroid
-



Medical Microbiology, Murray et al., p. 350

Q1

Primary syphilis

Painless ulcer with raised borders 10 to 90 days after initial infection

Secondary syphilis

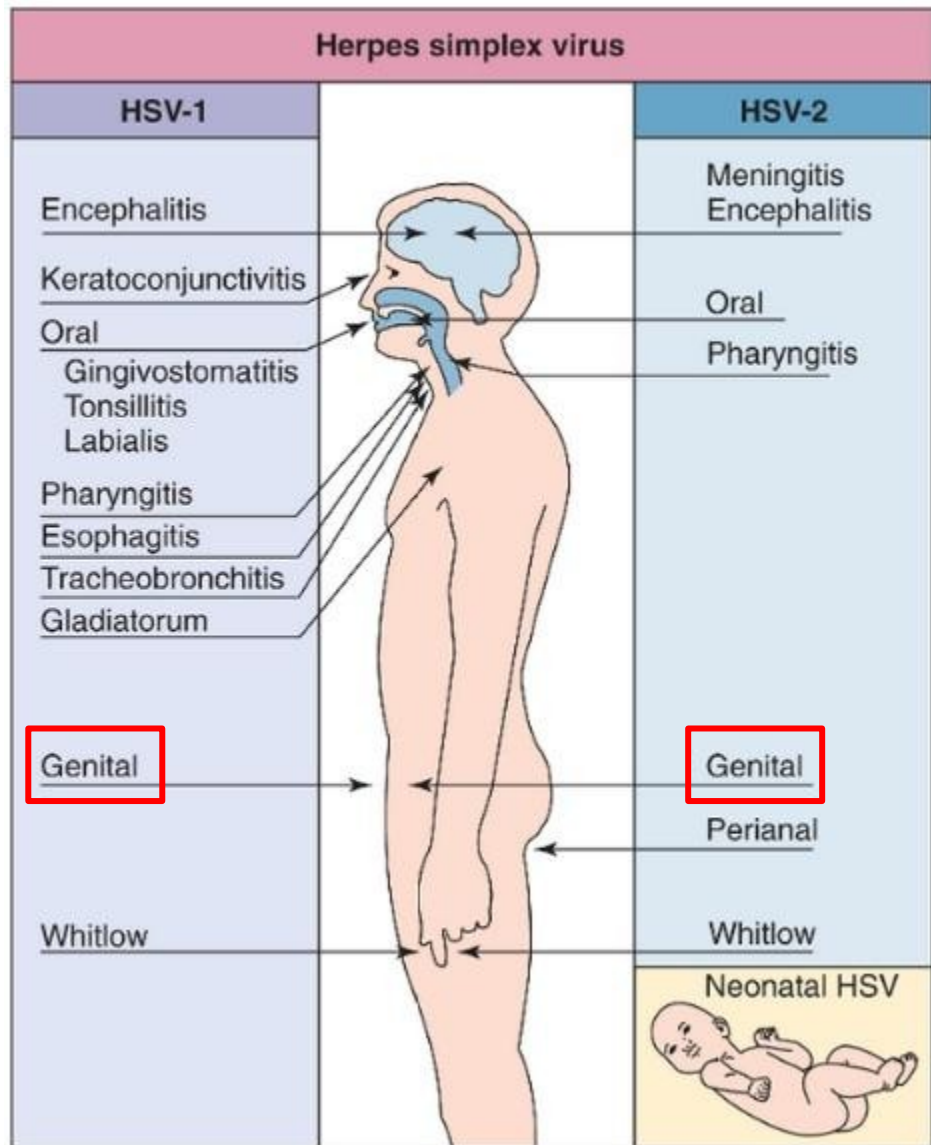
Flu-like symptoms with a generalized mucocutaneous rash

Tertiary syphilis

Diffuse, chronic inflammation affecting various organs (e.g. neurosyphilis, cardiovascular syphilis) accompanied by gummas

Table 39-3 Diagnostic Tests for Syphilis

| Diagnostic Test | Method or Examination |
|-----------------|---|
| Microscopy | Darkfield Direct fluorescent antibody staining |
| Culture | Not available |
| Serology | Nontreponemal tests: Venereal Disease Research Laboratory (VDRL) test Rapid plasma reagin (RPR) test Unheated serum reagin (USR) test Toluidine red unheated serum test (TRUST) Treponemal tests: Fluorescent treponemal antibody-absorption (FTA-ABS) <i>Treponema pallidum</i> particle agglutination (TP-PA) test Enzyme immunoassay (EIA) |



Medical Microbiology, Murray et al., p. 464

Table 51-2 Laboratory Diagnosis of Herpes Simplex Virus (HSV) Infections

| Approach | Test/Comment |
|--|--|
| Direct microscopic examination of cells from base of lesion | Tzanck smear shows multinucleated giant cells and Cowdry type A inclusion bodies |
| Cell culture | HSV replicates and causes identifiable cytopathologic effect in most cell cultures |
| Assay of tissue biopsy, smear, cerebrospinal fluid, or vesicular fluid for HSV antigen or genome | Enzyme immunoassay, immunofluorescent stain, in situ DNA probe analysis, and PCR |
| HSV type distinction (HSV-1 vs. HSV-2) | Type-specific antibody, DNA maps of restriction enzyme fragments, sodium dodecyl sulfate–gel protein patterns, DNA probe analysis, and PCR |
| Serology | Serology is not useful except for epidemiology |

DNA, Deoxyribonucleic acid; *PCR*, polymerase chain reaction.

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Tznack smear

A scraping of a base of a lesion

Cowdry type A acidophilic intranuclear inclusion bodies

A result of HSV disease mechanism

Inhibition of cellular macromolecular synthesis

Degradation of host cell DNA

Membrane permeation

Cytoskeletal disruption

Senescence of the cell

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Chancroid

STD

More often symptomatic in men

Tender papule with erythematous base on the genitalia or perianal area (5 - 7 days after infection)

Painful ulcer after 2 days, inguinal lymphadenopathy

Exclude syphilis and HSV

Microbe: **Haemophilus ducreyi**

Q1

Microbe: **Haemophilus ducreyi**

Microscopy

Small G (-) rod

Culture

Gonococcal agar

1-2% hemoglobin

5% fetal bovine serum

IsoViteleX (enrichment for fastidious organisms)

Vancomycin 3 ug/ml

Biochemical tests

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Acyclovir

Inhibits herpes viral polymerase (HSV 1,2; VSV; EBV)

Foscarnet

Inhibits viral DNA polymerase (CMV; acyclovir-resistant HSV)

Ribavirin

Inhibits inosine monophosphate dehydrogenase (RSV)

Vancomycin

G (+) multidrug-resistant organisms (e.g. *S. aureus*, *C. difficile*)

Q1

Microbe: **Haemophilus ducreyi**

Treatment

Most isolates of *H. ducreyi* are susceptible to
ERYTHROMYCIN (drug of choice)

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Sources

First Aid Q&A for the USMLE STEP 1 (2nd edition)

Medical Microbiology, Murray et al.

Study smart with

Student Consult



MURRAY
ROSENTHAL
PFALLER

Medical Microbiology

Seventh Edition

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