Herpes Zoster: Review Questions

Paul F. Roberts, MD

QUESTIONS

Choose the single best answer for each question.

Questions 1 to 3 refer to the following case.

A 72-year-old man in good health presents to his family physician with fever and malaise that have lasted for several days. He also reports that he has developed an itchy, burning rash on the right side of his chest and back. All vital signs are within normal limits. Physical examination reveals an erythematous maculopapular rash with vesicles on the right side of the patient's back and chest wall (**Figure**). Based on history and physical examination, the patient is diagnosed with herpes zoster infection.

1. **Which of the following will this patient most likely experience as a result of herpes zoster infection?**
   (A) Cellulitis
   (B) Encephalitis
   (C) Muscular weakness
   (D) Postherpetic neuralgia

2. **Herpes zoster ophthalmicus is a serious condition with a threat of visual loss. The physician further evaluates the patient for visual and otologic complications related to herpes zoster infection; there is no eye redness, facial lesions, or external auditory canal lesions. If the examination had revealed evidence of herpes zoster ophthalmicus, which of the following cranial nerves would be involved?**
   (A) Facial nerve
   (B) Oculomotor nerve
   (C) Trigeminal nerve
   (D) Trochlear nerve

Figure. Erythematous maculopapular rash with vesicles similar to that found on the case patient referred to in questions 1 through 3. (Reprinted with permission from Habif TP. Clinical dermatology: a color guide to diagnosis and therapy. 3rd ed. St. Louis: Mosby; 1996:352. Copyright 1996, with permission from Elsevier.)

3. **Which of the following is a major otologic complication of herpes zoster infection?**
   (A) Alport's syndrome
   (B) Cellulitis
   (C) Ramsay Hunt syndrome
   (D) Tinnitus

Questions 4 and 5 refer to the following case.

A 70-year-old woman presents to her family physician requesting more information about the herpes zoster vaccine. Her friends have told her about the new vaccine, and she wants to know if she is a candidate to receive it. She had chicken pox as a child but has not had shingles. She notes that she is concerned about shingles because of the debilitating pain associated with this condition.

Dr. Roberts is an assistant professor of family medicine, Mayo Clinic, Jacksonville, FL.

4. **Use of the herpes zoster vaccine is recommended in which of the following age-groups?**
   (A) Persons aged ≥ 40 years
   (B) Persons aged ≥ 50 years
   (C) Persons aged ≥ 60 years
   (D) Persons aged ≥ 70 years

5. **The herpes zoster vaccine is made from which of the following components?**
   (A) Inactivated virus
   (B) Live attenuated virus
   (C) Polysaccharides
   (D) Toxoid

6. **The incidence of herpes zoster is higher among patients who are immunocompromised. What is the approximate incidence of herpes zoster in HIV-infected patients compared with the general population?**
   (A) 5 times higher
   (B) 15 times higher
   (C) 25 times higher
   (D) 30 times higher

7. **Which of the following antiviral drugs used to manage acute herpes zoster infection has the lowest bioavailability?**
   (A) Acyclovir
   (B) Famciclovir
   (C) Ganciclovir
   (D) Valacyclovir

ANSWERS AND EXPLANATIONS

1. **(D) Postherpetic neuralgia.** Herpes zoster occurs as a result of reactivation of the varicella-zoster virus in the dorsal root ganglia. The virus can remain latent for decades and reactivates following a decrease in virus-specific cell-mediated immunity. The virus travels down the sensory nerve, which leads to a dermatomal distribution of skin lesions and pain. The lifetime incidence of herpes zoster infection is estimated to be between 10% and 20%, with the incidence increasing sharply with advanced age.[1] The most common complication of herpes zoster is postherpetic neuralgia, pain that persists well after the lesions and rash have healed. Postherpetic neuralgia is more common in patients aged older than 60 years.[1] Approximately 20% of patients who have herpes zoster infection will develop postherpetic neuralgia. Herpes zoster lesions may become secondarily infected, resulting in cellulitis; however, this complication occurs in only 2% to 3% of herpes zoster–infected patients. Encephalitis and muscular weakness are much less common complications of herpes zoster infection as compared with postherpetic neuralgia.

2. **(C) Trigeminal nerve.** Herpes zoster ophthalmicus involves the ophthalmic division of the trigeminal nerve, which is the most commonly involved cranial nerve dermatome.[2] Complications of herpes zoster ophthalmicus may include conjunctivitis, keratitis, episcleritis, and anterior uveitis. Early diagnosis is important to prevent potential corneal involvement and loss of vision. Treatment of herpes zoster ophthalmicus includes antiviral therapy and topical steroid drops. Ophthalmology referral is needed in many cases. Herpes zoster can affect other cranial nerves, leading to cranial nerve palsies and limiting extraocular mobility, but this is less common.

3. **(C) Ramsay Hunt syndrome.** Ramsay Hunt syndrome is a serious condition that affects the geniculate ganglion of the facial nerve and is associated with ear pain, facial paralysis, and the formation of vesicles in the external auditory canal. Patients can also lose their sense of taste in the anterior two thirds of the tongue. Alport's syndrome is a hereditary nephritis associated with sensorineural hearing loss. Tinnitus and cellulitis can occur along with herpes zoster infection but are not major otologic complications.

4. **(C) Persons aged ≥ 60 years.** Herpes zoster vaccine is currently recommended for all persons aged 60 years and older. Approximately 90% of the adult population is at risk for herpes zoster infection (shingles), and for persons older than 85 years, the lifetime risk of developing this infection is approximately 50%.[3] In the United States, approximately 1 million cases of herpes zoster infection occur annually. In older or debilitated patients, complications from herpes zoster infection can lead to hospitalization and decreased activities of daily living. Booster doses of herpes zoster vaccine are not recommended at the present time. The vaccine not only decreases the incidence of herpes zoster infection (and therefore fewer patients experience complications such as postherpetic neuralgia), but it also reduces hospitalizations associated with infection.[3] Once diagnosed with herpes zoster infection (shingles), patients can be treated with antiviral therapy, steroids, tricyclic antidepressants, anticonvulsants, opioids, or lidocaine patches.

5. **(B) Live attenuated virus.** The herpes zoster vaccine is formulated from a live attenuated virus. The vaccine induces both antibody- and cell-mediated immune responses. Because the vaccine is comprised of live virus, its use is contraindicated in patients who are immunocompromised, such as patients with malignant neoplasms or HIV infection or patients on high-dose corticosteroid therapy.[4] Adverse reactions from the herpes zoster vaccine include injection site erythema, pain, swelling, and pruritus. Examples of vaccines made from toxoids, inactivated viruses, and polysaccharides include the tetanus vaccine, the polio vaccine, and the meningococcal vaccine, respectively.

6. **(B) 15 times higher.** The incidence of herpes zoster is about 15 times higher in HIV-infected patients than in persons who are uninfected. Decreased cell-mediated immunity is thought to account for this increased incidence of varicella-zoster virus reactivation. The development of herpes zoster in HIV-infected patients is not associated with duration of HIV infection and does not predict the progression of HIV to AIDS. Patients with certain malignancies, such as Hodgkin's lymphoma, are at increased risk for herpes zoster as well. Radiotherapy, chemotherapy, and chronic corticosteroid use may also increase the risk of developing herpes zoster.

7. **(A) Acyclovir.** Antiviral drugs have been shown to decrease the severity of pain associated with the herpes zoster rash and rash duration.[3] However, benefits have only been shown to occur in patients who received antiviral therapy within 72 hours after the onset of the rash. There are 3 antiviral drugs typically used to treat herpes zoster infection: acyclovir, famciclovir, and valacyclovir. Of these drugs, acyclovir is the least expensive but has the lowest bioavailability and must be taken 5 times daily. Famciclovir and valacyclovir are more bioavailable than acyclovir and both are taken 3 times daily.[3] Intravenous use of acyclovir is used in patients who are severely immunocompromised or who cannot take oral medication. Ganciclovir is an antiviral drug that is generally used to treat cytomegalovirus infections.

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