≤24 h duration. (Valacyclovir is licensed for use in children and adolescents. Famciclovir is recommended but not licensed for varicella.) Likewise, acyclovir therapy may be of benefit to children <12 years of age if initiated early in the disease (<24 h) at a dose of 20 mg/kg every 6 h. The advantages (i.e., pharmacokinetics) of the second-generation agents valacyclovir and famciclovir are described in **Chap. 215e**.

Aluminum acetate soaks for the management of herpes zoster can be both soothing and cleansing. Patients with herpes zoster benefit from oral antiviral therapy, as evidenced by accelerated healing of lesions and resolution of zoster-associated pain with acyclovir, valacyclovir, or famciclovir. Acyclovir is administered at a dosage of 800 mg five times daily for 7–10 days. However, valacyclovir and famciclovir are superior in terms of pharmacokinetics and pharmacodynamics and should be used preferentially. Famciclovir, the prodrug of penciclovir, is at least as effective as acyclovir and perhaps more so; the dose is 500 mg by mouth three times daily for 7 days. Valacyclovir, the prodrug of acyclovir, accelerates healing and resolution of zoster-associated pain more promptly than acyclovir. The dose is 1 g by mouth three times daily for 5–7 days. Compared with acyclovir, both famciclovir and valacyclovir offer the advantage of less frequent administration. All three of these drugs are now off patent.

In severely immunocompromised hosts (e.g., transplant recipients, patients with lymphoproliferative malignancies), both chickenpox and herpes zoster (including disseminated disease) should be treated, at least at the outset, with IV acyclovir, which reduces the occurrence of visceral complications but has no effect on healing of skin lesions or pain. The dose is 10 mg/kg every 8 h for 7 days. For low-risk immunocompromised hosts, oral therapy with valacyclovir or famciclovir appears beneficial. If medically feasible, it is desirable to decrease immunosuppressive treatment concomitant with the administration of IV acyclovir.

Patients with varicella pneumonia often require ventilatory support. Persons with zoster ophthalmicus should be referred immediately to an ophthalmologist. Therapy for this condition consists of the administration of analgesics for severe pain and the use of atropine. Acyclovir, valacyclovir, and famciclovir all accelerate healing. Decisions about the use of glucocorticoids should be made by the ophthalmologist.

The management of acute neuritis and/or postherpetic neuralgia can be particularly difficult. In addition to the judicious use of analgesics ranging from nonnarcotics to narcotic derivatives, drugs such as gabapentin, pregabalin, amitriptyline hydrochloride, lidocaine (patches), and fluphenazine hydrochloride are reportedly beneficial for pain relief. In one study, glucocorticoid therapy administered early in the course of localized herpes zoster significantly accelerated such quality-of-life improvements as a return to usual activity and termination of analgesic medications. The dose of prednisone administered orally was 60 mg/d on days 1–7, 30 mg/d on days 8–14, and 15 mg/d on days 15–21. This regimen is appropriate only for relatively healthy elderly persons with moderate or severe pain at presentation. Patients with osteoporosis, diabetes mellitus, glycosuria, or hypertension may not be appropriate candidates. Glucocorticoids should not be used without concomitant antiviral therapy.

PREVENTION

Three methods are used for the prevention of VZV infections. First, a live attenuated varicella vaccine (Oka) is recommended for all children >1 year of age (up to 12 years of age) who have not had chickenpox and for adults known to be seronegative for VZV. Two doses are recommended for all children: the first at 12–15 months of age and the second at ~4–6 years of age. VZV-seronegative persons >13 years of age should receive two doses of vaccine at least 1 month apart. The vaccine is both safe and efficacious. Breakthrough cases are mild and may result in spread of the vaccine virus to susceptible contacts. The universal vaccination of children is resulting in a decreased incidence of chickenpox in sentinel communities. Furthermore, inactivation of the vaccine virus significantly decreases the occurrence of herpes zoster after hematopoietic stem-cell transplantation.

TABLE 217-1 RECOMMENDATIONS FOR VZIG ADMINISTRATION

Exposure Criteria
1. Exposure to a person with chickenpox or zoster
a. Household: residence in the same household
b. Playmate: face-to-face indoor play
c. Hospital
Varicella: same 2- to 4-bed room or adjacent beds in large ward, face-to-face contact with infectious staff member or patient, visit by a person deemed contagious
Zoster: intimate contact (e.g., touching or hugging) with a person deemed contagious
d. Newborn infant: onset of varicella in the mother ≤5 days before delivery or ≤48 h after delivery; VZIG not indicated if the mother has zoster
2. Patient should receive VZIG as soon as possible but not >96 h after exposure
Candidates (Provided They Have Significant Exposure) Include:
1. Immunocompromised susceptible children without a history of varicella or varicella immunization
2. Susceptible pregnant women
3. Newborn infants whose mother had onset of chickenpox within 5 days before or within 48 h after delivery
4. Hospitalized premature infant (≥28 weeks of gestation) whose mother lacks a reliable history of chickenpox or serologic evidence of protection against varicella
5. Hospitalized premature infant (<28 weeks of gestation or ≤1000-g birth weight), regardless of maternal history of varicella or VZV serologic status

In individuals >50 years of age, a VZV vaccine with 18 times the viral content of the Oka vaccine decreased the incidence of shingles by 51%, the burden of illness by 61%, and the incidence of postherpetic neuralgia by 66%. The Advisory Committee on Immunization Practices has therefore recommended that persons in this age group be offered this vaccine in order to reduce the frequency of shingles and the severity of postherpetic neuralgia.

A second approach is to administer varicella-zoster immune globulin (VZIG) to individuals who are susceptible, are at high risk for developing complications of varicella, and have had a significant exposure. This product should be given within 96 h (preferably within 72 h) of the exposure. Indications for administration of VZIG appear in **Table 217-1**.

Lastly, antiviral therapy can be given as prophylaxis to individuals at high risk who are ineligible for vaccine or who are beyond the 96-h window after direct contact. While the initial studies have used acyclovir, similar benefit can be anticipated with either valacyclovir or famciclovir. Therapy is instituted 7 days after intense exposure. At this time, the host is midway into the incubation period. This approach significantly decreases disease severity, if not totally preventing disease.

218 Epstein-Barr Virus Infections, Including Infectious Mononucleosis

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DEFINITION

Epstein-Barr virus (EBV) is the cause of heterophile-positive infectious mononucleosis (IM), which is characterized by fever, sore throat, lymphadenopathy, and atypical lymphocytosis. EBV is also associated with several tumors, including nasopharyngeal and gastric carcinoma, Burkitt's lymphoma, Hodgkin's disease, and (in patients