Chicken Pox in a Neonate
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Abstract
Chickenpox (Varicella) is a common and highly infectious disease. It has worldwide distribution. Chickenpox is transmitted from person to person by direct contact, droplet or airborne spread. Infection can also arise through articles recently contaminated by an infected person. Infectivity is maximal during the prodromal period and has completely waned by the time the eruption becomes crusted. Postnatal infection can cause classical chickenpox of a lesser severity occurring only in babies whose mothers have not had chickenpox.

Introduction
Varicella-zoster virus (VZV) causes: a) primary b) latent and c) recurrent infections. The primary infection is manifested as Varicella (chickenpox) and results in establishment of a lifelong latent infection of sensory ganglion neurons. Reactivation of the latent infection causes herpes zoster (shingles). Although often a mild illness of childhood chickenpox can cause substantial morbidity and mortality in otherwise healthy children. In children, adolescents, adults and immunocompromised persons it predisposes to severe group A streptococcus and Staphylococcus aureus infections. Gestational chickenpox can be severe in the mother and can cause a rare but distinct intrauterine syndrome. Chickenpox in the newborn can be severe and life threatening. Chickenpox and zoster can be treated with antiviral drugs. Infection can be prevented by immunization with live-attenuated VZV vaccine. The only antiviral drug available in liquid formulation and licensed for pediatric use is Acyclovir; given the safety profile of Acyclovir and its demonstrated efficacy in the treatment of Varicella in children, adolescents, and adults.

Keywords: Varicella, Chicken Pox, Neonate.

Case Report
23 days old Indian male baby brought to our pediatric outpatient clinic with history of papular rashes on the body, face, limbs and fever for last two days. It was full term, born by normal vaginal delivery. His Apgar score was 5,7, and 9 at 1, 5 and 10 minutes. He was on breast and bottle feeding. His mother got Chicken pox infection ten days after delivery and was treated. Mother was separated from the baby for one week till she recovered from Chicken pox. The other sibling is a 4 years old girl and is normal. On examination weight was 3.2 kilogram (Kg), length 51 centimeter (cm), head circumference was 34 cm, temperature 38.1 centigrade, heart rate 120/minute (min), respiratory rate 55/min. Blood pressure was not recorded. Febrile, active, pink. On demand feeding. Discrete small macular papular and vesicular lesions on the skin of face, trunk and limbs measuring from 1-2 centimeter filled with clear fluid (Figure 1). Throat showed mild congestion. Clinically all systems were stable. In view of the stable condition of the baby, management was planned on outpatient basis. Patient was put on treatment syrup Zovirax (Acyclovir from Glaxosmith Kline Germany) 60 milligrams per kilogram body weight per day in two divided doses for five days. Adol drops (paracetamol from Gulf pharmaceutical industries Ras Al Khaimah, UAE) 10 mg/kg in two divided doses. Fenistil (dimetindene maleate from Novartis, Switzerland). Fenistil gel for skin itching for ten days. Patient is coming regularly for follow up and has recovered completely.
Discussion
Varicella is an acute febrile rash illness, common in children. It has variable severity but is usually self-limited. It may be associated with severe complications including bacterial super-infection, pneumonia, encephalitis, bleeding disorders, congenital infection and life-threatening perinatal infection. Varicella zoster virus is transmitted in respiratory secretions and in the fluid of skin lesions either by airborne spread or through direct contact. Primary infection (Varicella) results from the respiratory inoculation of virus. During the early part of the 10-21-days incubation period, virus replicates in the respiratory tract followed by a brief subclinical viremia. Widespread cutaneous lesions occur during second viremia phase. Peripheral blood mononuclear cells carry infectious virus, generating new crops of vesicles for 3-7 days. VZV is also transported back to respiratory mucosal sites during the late incubation period, permitting spread to susceptible contacts before the appearance of rash. Varicella-zoster virus (VZV) causes primary, latent, and recurrent infections. The primary infection is manifested as Varicella (chickenpox) and results in establishment of a lifelong latent infection of sensory ganglion neurons. Reactivation of the latent infection causes herpes zoster (shingles). Varicella lesions often appear first on the scalp, face, or trunk. The initial exanthema consists of intensely pruritic erythematous macules that evolve through the papular stage to form clear, fluid-filled vesicles. Clouding and umbilication of the lesions begin in 24-48 hr. While the initial lesions are crusting; new crops form on the trunk and then the extremities. The simultaneous presence of lesions in various stages of evolution is characteristic of Varicella. The average number of Varicella lesions is about 300 but healthy children may have fewer than 10 to more than 1,500 lesions. The exanthema may be much more extensive in children with skin disorders such as eczema or recent sunburn. Hypopigmentation or hyper pigmentation of lesion sites persists for days to weeks in some children but severe scarring is unusual unless the lesions were secondarily infected although often a mild illness of childhood chickenpox can cause substantial morbidity and mortality in otherwise healthy children. In hemorrhagic chickenpox there is usually high fever, extensive bleeding into the vesicles and the lesions become black. There may be hematuria or melena. It has been reported in patients receiving corticosteroids or cytotoxic drugs. It can
be associated with thrombocytopenic purpura. Varicella gangrenositis usually results from secondary bacterial infection. The lesions extend up to muscles. These lesions are slow to heal and can leave considerable scarring. Varicella bullosa lesions develop into large bullae with positive Nikolsky sign. It is due to super infection with Staphylococcus aureus. Prognosis is excellent after treatment. Sepsis, secondary skin infection is the commonest complication. Abscesses may form locally or in regional lymph nodes. Cellulitis, erysipelas and scarlet fever can also develop. Bacteremia may give rise to pneumonia, osteomyelitis and septic arthritis, post infectious encephalitis, cerebellar ataxia, acute disseminated encephalomyelitis. About 10% of cases of Reye Syndrome occur secondary to Chicken pox. Transverse myelitis, acute infantile hemiplegia and Guillain Barre syndrome have been described complicating Varicella. Pneumonitis is usually seen in immunocompromised children and Varicella neonatorum. Other complications include pancarditis, hepatitis, and glomerulonephritis. Appendicitis may also occur. Keratitis and Conjunctivitis are rare. Differential diagnosis includes impetigo, scabies, eczema herpeticum and erythema multiform. Chickenpox and zoster can be treated with antiviral drugs. Infection can be prevented by immunization with live-attenuated VZV vaccine. Present World health Organization recommendation for the vaccination is two doses of the vaccine; one at the age of one year and second dose at the age of four years. Vaccine is more than 95% effective in preventing typical Varicella and is 70-90% effective preventing the disease. Asymptomatic infection with wild-type virus may occur frequently in the previously immunized child. Chickenpox in the newborn can be severe and life threatening. Prior to the introduction of vaccine in 1995, Varicella was an almost universal communicable infection of childhood in the United States. Most children were infected by 15 yr of age, with fewer than 5% of adults remaining susceptible. Annual Varicella epidemics occurred in winter and spring. Varicella that occurs among immunized children (so-called breakthrough Varicella) is usually very mild.

Newborns have particularly high mortality in the circumstances of a susceptible mother contracting Varicella around the time of delivery. Birth within 1 wk before or after the onset of maternal Varicella frequently results in the newborn developing Varicella which may be severe. The initial infection is intrauterine, although the newborn often develops clinical chickenpox postpartum. The risk to the newborn is dependent on the amount of maternal anti-VZV antibody that the fetus acquired transplacentally before birth. If there was 1 week or greater interval between maternal chickenpox and parturition, it is likely that the newborn received sufficient transplacental antibody to VZV to ameliorate neonatal infection. Alternatively, if the interval was less than 1 week, the newborn will be unlikely to have protective VZV antibody and neonatal chickenpox may be exceptionally severe. Antiviral treatment modifies the course of both Varicella and herpes zoster. Antiviral drug resistance is rare but has occurred in children with HIV infection who have been treated. Foscarnet is the only drug now available for the treatment of Acyclovir-resistant VZV infections. We do see mild (modified) type of Chicken Pox cases in pediatric population in our outpatient clinic. Some of them vaccinated against this disease respond to our routine management without admission into the wards.

References

Conflict of Interest: None

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