

## CASE REPORT

## Neonatal Varicella Following Maternal Chickenpox Infection at Term: A Case Report

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DISCLOSURE

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ABSTRACT

Maternal chickenpox resulting in neonatal infection is not common, considering widespread vaccination for chickenpox. Most women of child bearing age have antibodies against varicella zoster virus. However, when it does occur, the gestational age at onset markedly affects the severity of the illness in the fetus or newborn. The presence of maternal antibodies, use of passive immunization with zoster immune globulin and prompt institution of acyclovir once child shows evidence of illness has been shown to significantly reduce morbidity and mortality.

**Key Words:** Acyclovir, Zoster immunoglobulin, Varicella zoster virus, Passive immunity.

## INTRODUCTION

Varicella is an acute febrile illness with vesiculo-papular rash caused by *Varicella-zoster virus* (VZV).<sup>1,2</sup> Its manifestation varies from mild febrile illness to severe life-threatening complications like bacterial superinfection, pneumonia, encephalitis and bleeding disorders.<sup>1</sup> Disease severity and mortality rate (as high as 30% without antiviral treatment) is particularly high in neonates especially if they have not received passive immunity from their mother.<sup>1</sup>

Neonatal varicella can be expected if a mother contracts chickenpox during the last 3 weeks of pregnancy.<sup>3</sup> Though the precise incidence of gestational varicella is unknown, varicella is an uncommon occurrence in pregnancy.<sup>4</sup> Maternal chickenpox near term or soon after delivery may cause severe or fatal illness in the newborn.

Maternal varicella can infect the baby by transplacental viraemia, ascending infection during birth, or respiratory droplet/direct contact with infectious lesions after birth.<sup>3</sup> Varicella occurs in 25% of newborns whose mothers develop varicella in the peripartum period.<sup>4</sup> Neonatal chickenpox occurring in the first 10 to 12 days of life has to be caused by intrauterine transmission of VZV because of the incubation period of varicella. Chickenpox after the 10th to 12th day of the neonatal period is most likely acquired by postnatal VZV infection and has a low morbidity rate as most neonates are protected by maternally derived antibodies.<sup>2</sup>

Mortality rates as high as 30% has been recorded in neonates whose mother had varicella within 5 days before and two days after delivery.<sup>5</sup> If signs of maternal chickenpox infection develop from 5 days

before through 2 days after delivery, infants should be given varicella zoster immune globulin (VZIG) immediately after birth [or intravenous immune globulin (IVIG) if VZIG is unavailable], irrespective of maternal VZIG administered at onset of illness.<sup>6</sup> These infants should be observed closely, because many will still develop chickenpox infection.<sup>7</sup> although their risk of severe infection will be decreased.<sup>6</sup> Antiviral therapy with acyclovir may be indicated.<sup>7</sup>

We report a rare case of neonatal varicella following maternal varicella infection peripartum, who was managed with IVIG and Acyclovir.

## CASE REPORT

Baby A was initially admitted on the 10<sup>th</sup> minute of life following delivery via an emergency cesarean section at an estimated gestational age of 36 weeks and 3 days. She was delivered to a para 5<sup>+5</sup>, 3 alive woman who was then being managed for an acute varicella zoster infection.

Mother had presented a day prior to delivery with a day history of generalized body rash which initially started on the trunk and spread to the other parts of the body. There was associated high grade fever, headache and pruritus. There was a history of contact with someone with similar symptoms two weeks prior to presentation.

On examination, she was found to have generalized vesiculo-papular lesions with fever and a diagnosis of Varicella in pregnancy was made. She was placed on Acyclovir, Augmentin and Paracetamol with close faeto-maternal monitoring. Fetal tachycardia and a deteriorating biophysical profile necessitated an emergency cesarean

section. A live female neonate with APGAR scores of 8 and 9 in the first and fifth minute, and a birth weight of 2.8kg was delivered and transferred to the Special Care Baby Unit for further evaluation and management. She was active, pink, anicteric, afebrile with good vitals; tones and reflexes were normal.

A diagnosis of varicella exposed late preterm was made. Samples were taken for basic investigations and baby was commenced on antibiotics (Augmentin, gentamicin) and Zoster immune globulin was requested. Baby was nursed in isolation and commenced on breast milk substitute at full maintenance.

Full blood count, electrolytes urea and creatinine values were all within normal limits for age. Malaria parasite test was negative. Both Mother and child were blood group A positive. Total serum bilirubin on third day of life was 7.8mg/dl. Facilities for serologic studies for varicella were not available.

Due to inability to procure Zoster immune globulin, Intravenous Immune globulin was administered at 63<sup>rd</sup> hour of life which was well tolerated with no adverse effect. Mother and Baby were discharged on the 7<sup>th</sup> day of life and parents were counseled on the natural course of the illness and advised to report back if baby became ill or develops any rash. Baby was continued on breastmilk substitute (BMS) until all mother's rash had crusted over.

The neonate developed a fever on the 10<sup>th</sup> day of life and two days later, papules were noticed by parents and following clinic visit on the 14<sup>th</sup> day of life, baby was commenced on oral cefpodoxime. She was re-admitted on the 16<sup>th</sup> day of life. Positive findings were a mild fever with the presence of few scattered umbilicated rashes on the scalp, trunk and

limbs. Other systemic examinations were essentially normal.

A clinical diagnosis of neonatal varicella infection was made and baby was commenced on parenteral Acyclovir 10mg/kg/dose 8 hourly. Baby now breastfeeding and gaining weight adequately. She remained stable and was eventually discharged on the 23<sup>rd</sup> day of life after 7 days of intravenous acyclovir. All rashes have crusted over by the 30<sup>th</sup> day of life when the neonate was reviewed during outpatient follow up visit

**Figure1.** Baby with few scattered rashes on the body



**Figure2.** Mother with varicella rash.



## DISCUSSION

Maternal varicella can result in varying clinical syndromes in newborn depending on the gestational age at which the mother contracts the disease.

Congenital varicella syndrome is more common between 13 to 20 weeks gestational age, though has been noticed to occur as late as 28 weeks gestational age.<sup>8</sup>

Intrauterine infection or mild postnatal infection may occur if contracted in early third trimester or baby may develop severe neonatal varicella infection when maternal varicella occurs 5 before or 2 days after delivery. Considering the incubation period of VZV (10-21 days) and the history of exposure two weeks prior to delivery, production of antibodies is expected to have commenced prior to delivery

Diagnosis of varicella is usually made on the basis of clinical findings and maternal history.<sup>4</sup> With neonatal disease, the presence of the typical rash and maternal history of peripartum varicella suffices.<sup>4</sup>

Administration of ZIG or IVIG to susceptible mothers and or exposed neonates can alter the course of the illness, and not necessarily prevent infection of the neonate.<sup>6,9</sup> As was observed in this index case, the course of the illness was mild, most probably because there was enough time for mother to develop and pass on antibodies against VZV to the neonate; the mother had active treatment with acyclovir and the administration of IVIG to the baby within 72 hours of birth also would have contributed to the attenuation of the clinical features of neonatal varicella in this neonate.

Causes of morbidity and mortality in varicella infection include bacterial super-infection, pneumonia, encephalitis and bleeding disorders. Preventive modalities include administration of antibiotics which was done in this neonate. Administration of Acyclovir should also be timely as soon as the neonate shows any signs of illness. And this was also instituted in the index case.

Separation of mother and child, though was done in this index case, has been proven to be unnecessary, and breastfeeding should not be prevented, especially in this case where mother and baby were on treatment. Counseling is necessary because children who had neonatal varicella are at risk of Herpes Zoster (shingles) within the first two years of life.<sup>10</sup>

## CONCLUSION

Neonatal varicella can present as a severe infection in the fetus and neonate, and judicious preventive measures with ZIG/IVIG, Acyclovir and antibiotics is critical for minimizing morbidity and mortality. It is important to access prompt care once fever and rash is noted at any stage of pregnancy. Breastfeeding should not be stopped on account of maternal varicella.

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