

A Case of Disseminated Neonatal Varicella Infection: A Challenge to Treat

Shamsun Nahar Bintha Mannan^{1*} Feroza Akhter² Kohinur A Bakul³ Bibi H Aurin⁴

ABSTRACT

Background: Varicella infection caused by varicella zoster virus can occur in intrauterine life and in neonate if mother is infected with the virus. The characteristic skin lesions are vesicular eruption at the hairline with caudal spread from the head to the trunk and extremities giving a centripetal distribution and pruritus followed by a prodrome of fever, malaise, headache and myalgias. The aim and objectives of this case report is to aware about severe complications of varicella infection in neonate which require early diagnosis and prompt management.

Case Presentation: We report a case of neonatal varicella where the mother was having vesicular skin eruptions two days prior to the time of delivery and the neonate contracted it during the perinatal period and developed clinical disease on the twelfth day of life complains of skin eruptions with fluid filled lesions all over the body associated with fever and poor feeding, excessive cry and respiratory difficulty for 2 days. Metabolic acidosis, hypoalbuminaemia, impetigo and abscesses, bacteraemia, pneumonia complicate the patient. Specific anti-viral therapy, intravenous immunoglobulin, intravenous albumin, electrolytes were given. early diagnosis and prompt management save the life of the patient.

Conclusion: Maternal varicella infection just before delivery has higher risk of developing neonatal varicella infection which can be disseminated and fetal. Early diagnosis and prompt management, prophylactic treatment to neonatal are the key to save patient from complications and disseminations.

KEY WORDS

Dissemination; Neonatal Varicella infection.

INTRODUCTION

Varicella-Zoster Virus (VZV) is a double stranded encapsulated DNA virus belonging to the Herpes virus family (human Herpes virus type 3, HHV-3).¹ The virus is spread by airborne droplets and by direct contact with the fluid of infectious lesions, highly contagious and epidemics occur most often in late winter or spring. The incubation period is from 10 to 21 days, followed by a prodrome of fever, malaise, headache and myalgia's. The rash typically begins 24-48 hours later at the hairline with caudal spread from the head to the trunk

and extremities, giving a centripetal distribution. Lesions are pruritic and vesicular on an erythematous base ('Dewdrops on a rose petal').²⁻³ Varicella infection has a broad range of clinical presentations, from mild spontaneously resolving infections to severe complicated episodes requiring hospitalization and intravenous therapies.⁴ It can lead to disseminated life-threatening diseases in unimmunized newborns contaminated around the time of delivery. Pattern and severity of child infection depends on the moment of contamination (Before, around or after delivery) the maternal immunostatus against VZV, the gestational age of the baby and the presence of other underlying conditions.⁵ The most common complication seen is bacterial super infection leads to impetigo and abscesses and rarely bacteraemia, pneumonia and encephalitis.⁵

CASE PRESENTATION

Master 'X' 14 days old post dated (40+wks) male normal vaginally delivered neonate, 1st issue of a non-consanguineous parents from kotwali visiting to Outpatient Department of Dermatology and Venereology of Chattagram Maa-O-Shishu Hospital on 1st August, 2022 with the chief complains of skin eruptions with fluid filled lesions all over the body associated with fever and poor feeding, excessive cry

1. Associate Professor of Dermatology and Venereology
Chattagram Maa-O-Shishu Hospital Medical College, Chattogram.
 2. Associate professor of Neonatology
Chattagram Maa-O-Shishu Hospital Medical College, Chattogram.
 3. Medical Officer of Dermatology and Venereology
Chattagram Maa-O-Shishu Hospital Medical College, Chattogram.
 4. Medical officer of Pediatric Neurology
Chattagram Maa-O-Shishu Hospital Medical College, Chattogram.
- *Correspondence: Dr. Shamsun Nahar Bintha Mannan
 Email: nahar18.sn@gmail.com
 Cell : +88 01711 44 84 49

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and respiratory difficulty for 2 days with H/O varicella infection of mother two days before delivery of the child. According to patient's mother, the skin lesions initially starts from scalp, hairline then spread over the trunk then gradually spread to the whole body with nasal congestion and lesions became pus forming. There is no history of convulsion, diarrhea or vomiting with history of taking Homeopathic medicine and history of maternal chicken pox infection two days prior to the delivery of the baby. Outdoor consultant examined the patient and suspected the case was of neonatal varicella infection and advised to admit. After admission in neonatal ward respected bed doctor pediatrician found On admission baby was irritable, ill looking, toxic in appearance, moderate anaemia, no jaundice or dehydration, Heart rate-164b/m, R/R-72b/m, Temp-101 degree F, SBP-50 mm of Hg, Po2-92%, CRT-<30, weigh-3.8kg, length-48cm, OFC-34cm, Anterior fontanelle-open, on examination of skin there was vesicular eruption on erythematous base, non-follicular pustules with crust formation with vesicular lesions all over the body. On abdominal examination there is no organomegaly. His reflex was hypertonic, irregular, Swallowing: poor, no congenital anomaly. They provisionally diagnosed the case as a post dated (40+wks) with AGA9 (3.8kg) with varicella with secondary infection with low onset neonatal sepsis. On investigations there was microcytic hypochromic anaemia, neutrophilic leucocytosis, hyponatremia (124mmol/l), hypoalbuminaemia (1gm/dl), SGPT-normal(33u/l), Serum creatinine normal(0.3mg/dl), random blood sugar 105mg/dl, serum calcium 9.2mg/dl, Arterial blood gas analysis-shows oxygen saturation-96%,Paco2 decrease, sign of acidosis,urine routine examination was normal and urine culture shows no growth. Tzanck smears of skin scrapings show multinucleated giant cells and confirm the diagnosis of herpes virus infection, culture and sensitivity from pus from lesions shows growth of staphylococcus. Patient was treated in isolation ward with oxygen inhalation 1l/min, intravenous acyclovir (20mg/kg)-3cc+12cc I/V fluid @ 15d/min over one hour, eight hourly for 14 days, intravenous albumin 10gm/50ml-19ml I/V @6.3ml/min via g/p for 3 days, intravenous immunoglobulin (19cc I/V@ 6.3ml/h via s/p over 3 hours stat and daily for 3 days), Hyponatremia was corrected within 48 hours with nacl (0.9%), 80ml (Total requirement =deficit+daily requirement= 20.5+11.4= 32mcg) in a day with fluid, injectable antibiotics-cefotaxime and flucloxacillin, intravenous-amino acid,glucose and electrolytes, Calcium gluconate, frusemide topical mupirocin ointment, acyclovir cream.



Image 1 Vesiculopustular eruption with crust formation more confluent in face and trunk. On the day of admission



Image 2 Hyperpigmented crusted plaques and patches with scaling on the 7th day of admission



Image 3 Healed lesions, hyperpigmentation, residual crust and scarring on 10th day of admission

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DISCUSSION

Neonatal varicella is rarely encountered and treated even less. It is distinct from congenital varicella caused due to the intrauterine infection of the fetus. Neonatal varicella on the other hand is caused due to peri-natal infection of the neonate in a very narrow window of time. Incidence of neonatal varicella is very low. It is difficult to diagnose by residents and junior doctors and pediatricians.⁶ Experienced pediatric dermatologist can manage the case promptly. Disseminated varicella in the newborn was first described by Hubbard in the late 19th century.⁷ Incidence of varicella has been reported to be between 0.1 to 0.7/1000 pregnancies as around 88 to 98% of the population already has anti-varicella zoster virus antibodies by 20–40 years of age.⁸⁻¹⁰ Although the occurrence of neonatal varicella is quiet rare, up to 31% of infants with severe disease may succumb to it.¹¹ M. Aparajita et al. report a case of Haemorrhagic varicella in newborn in Indian pediatrics where she found the 21 days neonate presented with vesicular eruption all over the skin which gradually become haemorrhagic blisters in skin with melena, hepatomegaly with history of mothers varicella infection 4 days prior to delivery. They also treat the case with intravenous acyclovir for 14 days.¹² Ak. Bardwaj et al. report a case of neonatal varicella where they found mother with history of varicella infection 3 days prior delivery and deliver a healthy baby with no skin lesion and normal weight and normal vitals. They gave prophylactic acyclovir soon after birth but after 5 days neonate developed vesicular eruption in skin with respiratory difficulties, they shift the patient to NICU and continue acyclovir for 14 days and gradually lesions healed.¹³ Chandra Madhur Sharma et al also reported classical case of neonatal varicella without dissemination.¹⁴ Poonam Marwah et al report a case of fatal neonatal varicella despite varicella zoster immunoglobulin where they said about a 9 days old neonate with vesicular eruption all over skin with respiratory difficulties and poor feeding with history of receiving varicella zoster immunoglobulin 12h after delivery as child's mother had history of varicella infection 3 days prior delivery. On examination it was found that baby was in shock and repeated convulsion. He was isolated and treated with intravenous acyclovir (15 mg/kg 1 8 h), antibiotics, phenobarbital and phenytoin, inotropes and mechanical ventilation. The child, however, continued to deteriorate and expired on day 15 of life. Investigations revealed positive serum varicella zoster immunoglobulin M antibody test (Test value - 1.32 Immune Status Ratio [ISR] positive >0.90 ISR), lumbar puncture suggestive of viral encephalitis (Cerebrospinal fluid protein - 175 mg%,

sugar - 68 mg% [Blood sugar - 102 mg%], cells - 200/mm³, 70% were lymphocytes). Blood picture showed positive C-reactive protein. Repeated blood cultures sent during the neonate's hospital stay were sterile. Chest X-ray showed bilateral infiltrates suggestive of varicella pneumonia.¹⁵

It is very important to initiate anti-viral therapy in the neonate at the earliest opportunity. The case reported here and others reported had a very high chance of contracting neonatal varicella since the mother had developed chicken pox two days prior to the date of delivery. If acyclovir therapy was initiated prophylactically which was helpful in reducing both the severity and duration of the rash in the baby when baby is delivered may be there was a possibility of the baby may not develop complications. Acyclovir and its pro-drug form valacyclovir are the drugs of choice for treatment of acute Varicella zoster virus infection.

LIMITATIONS

Varicella zoster immunoglobulin can't given as unavailability of this immunoglobulin. So outcome can't be observed.

CONCLUSION

Maternal varicella infection just before delivery has highest risk for neonate to develop disseminated neonatal varicella infection. Management remains a challenge in daily practice. Contamination around delivery deserves aggressive preventive therapy. Rapid diagnosis and prompt management is lifesaving like this case.

RECOMMENDATION

Prophylactic antiviral is recommended for neonates who's mother has history of varicella infection one week prior delivery to prevent complications and dissemination. More cases required for future research.

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PATIENT CONSENT

Informed written consent was taken from the parents of the child for publication of this case report, including photographs.

DISCLOSURE

All the authors declared no competing interest.

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