



# Case of Bleeding Eye with Thrombocytopenia in Apparently Well Neonate

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## CASE PRESENTATION

A term, 2,900-g male infant is born via caesarean delivery to a gravida 2, para 1 woman. After birth, the infant is admitted in the NICU for respiratory distress due to transient tachypnea of newborn. He is discharged after 3 days and remains healthy until 35 days after birth, when he suddenly develops bilateral eye discharge that is initially watery and later becomes purulent. At 43 days after birth, the infant starts bleeding from both eyes, followed by the appearance of ecchymotic patches all over the body (Fig). A detailed history and examination reveal a history of conjunctivitis in all family members. There is no history of any fever, cough, cold, or coryza. The infant is exclusively breastfed and has received the BCG, oral poliovirus vaccine (OPV), and hepatitis B vaccines at birth. The parents seek medical advice for the infant's current condition and he is admitted. On investigation, he is found to have thrombocytopenia, with a platelet count of  $16 \times 10^3/\mu\text{L}$  ( $16 \times 10^9/\text{L}$ ). With this finding, the infant is then referred to our center for further management 45 days after birth.

On examination, the infant appears active and has stable vital parameters. He has swollen eyelids and conjunctival congestion with bloody discharge oozing from both eyes. Upon review by an ophthalmologist, the infant is diagnosed to have membranous conjunctivitis. He also has petechial and ecchymotic rashes all over his body, with other systemic findings being normal. Laboratory investigation shows severe thrombocytopenia, with a platelet count of  $9 \times 10^3/\mu\text{L}$  ( $9 \times 10^9/\text{L}$ ). Sepsis screen, liver and kidney functions, and coagulation profile are all normal. Conjunctival swab examination of the infant and all family members shows reactive lymphocytes. Conjunctival membrane peel swab and blood cultures were sterile. The infant is started on intravenous and topical antibiotics along with anti-inflammatory agents and daily ocular irrigation. He is also administered tobramycin eye drops 0.3% and copious lubrication in the form of carboxy methyl cellulose eye drops 0.5% every 2 hours.

Upon further evaluating the case for severe thrombocytopenia, the mother's platelet count was found to have been normal during the antenatal period, and the infant's platelet count had also been normal on routine investigations during

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**Figure.** Hemolacria.

his first NICU admission. Subsequently, on reviewing the case with the pediatric hematologist, the possibility of immune thrombocytopenia is considered, and a trial of intravenous immunoglobulin is started. Further evaluation is planned if there is no response to intravenous immunoglobulin. The infant also requires platelet transfusion during the course for thrombocytopenia with active bleeding. He shows a good response to the treatment, with the thrombocytopenia resolving over 3 days. The hemolacria also subsides and the infant is discharged with topical antibiotics after 4 days. Platelet counts during follow-up evaluations remain normal and bleeding symptoms do not recur.

## DISCUSSION

Hemolacria, or tears of blood, is an unusual phenomenon that has been associated with inflammation, injuries, or infections of the conjunctiva, eyelids, or nasolacrimal system. (1) Hemolacria occurring due to membranous or pseudomembranous conjunctivitis in neonates and infants is a rare event. Boffa et al reported a case of hemolacria in neonates due to severe pseudomembranous conjunctivitis caused by *Chlamydia trachomatis*. (2) A similar presentation of hemolacria of unknown etiology and another one due to congenital factor VII deficiency have also been reported in small infants. (1)(3) In the current case, bleeding eye was attributed to severe conjunctivitis with the formation of a true membrane that he acquired from infected family members. A true membrane (4) is formed when fibrin-rich inflammatory discharge coagulates involving the conjunctival

epithelium over the conjunctival surface. It leaves behind a raw bleeding surface on removal, unlike a pseudomembrane that can be easily scraped off without causing any bleeding. Various causative organisms related to membranous conjunctivitis are *Corynebacterium diphtheriae*, *Neisseria gonorrhoeae*,  $\beta$ -hemolytic *Streptococcus*, and adenovirus. (4) The pseudomembrane/membrane has to be peeled off and sent for culture sensitivity to rule out bacterial or chemical conjunctivitis encountered in neonates. However, in this case, no organism could be isolated but lymphocytes were reactive. A similar lymphocytic reaction was noted in the father and brother suggestive of viral etiology. Also, the presence of superficial punctate keratitis in the brother's eye on examination was suggestive of an adenoviral etiology but could not be established on microbiologic examination.

In addition to symptoms similar to those of family members, the infant had bleeding from the eyes. Along with hemolacria, petechial rashes and ecchymotic patches also appeared all over the body after about a week of the onset of conjunctivitis. The infant had severe thrombocytopenia, with a platelet count as low as  $9 \times 10^3/\mu\text{L}$  ( $9 \times 10^9/\text{L}$ ) and active mucocutaneous bleeding. All these findings were consistent with immune thrombocytopenia preceded by acute membranous conjunctivitis of possible viral etiology. However, membranous conjunctivitis and immune thrombocytopenia are separate issues and the causal association for both appears to be the same in this case. It is difficult to say what initiated the bloody tears in this case but based on the available literature, membranous conjunctivitis has been rarely implicated in hemolacria. However, thrombocytopenia has never been reported to cause bloody tears. Immune thrombocytopenia may have added to the severity once the bleeding began, and similarly, treatment for thrombocytopenia may have helped resolve the bleeding through the eyes. Moreover, even as a separate issue, immune thrombocytopenia itself is very rare in such a small infant.

Previously many clinicians were hesitant to diagnose immune thrombocytopenia in very young infants. However, for the current case, literature describing acute immune thrombocytopenia in neonates is available, with the earliest reported case being in a 24-day-old neonate. (5) This infant received intravenous immunoglobulin, following which platelet counts increased and reached normal values by day 3 of therapy. Such a good and rapid response to treatment was consistent with available literature. (5)(6) On discussion with the parents, it was decided to conduct a bone marrow examination if the infant showed no response to intravenous immunoglobulin

therapy. Bone marrow examination has been reported in almost all infants in the available literature. In the current case, platelet counts remained normal throughout the follow-up period, without any recurrence.

To conclude, severe conjunctivitis can cause hemolacria and efforts should be made to find the causative agent to provide appropriate therapy and avert complications. However, in this case, the severe thrombocytopenia may have further contributed to the occurrence of hemolacria. Currently available data suggest considering a diagnosis of immune thrombocytopenia, even in very young infants based on clinical features, thrombocytopenia, and normal systemic findings. Treatment outcome appears to be better than in older children.

#### Lessons for the Clinician

- In infants presenting with hemolacria, it is essential to rule out severe conjunctivitis.
- A detailed history and clinical examination are mandatory to determine the etiology and for proper management of such cases.
- Severe conjunctivitis with membrane or pseudomembrane formation can itself cause hemolacria, and efforts should be made to find the causative agent to provide appropriate therapy and avert complications.
- One can consider the diagnosis of immune thrombocytopenia even in very young infants, in whom treatment outcome appears to be more favorable than in older children.

## American Board of Pediatrics Neonatal-Perinatal Content Specifications

- Know the clinical and laboratory manifestations and management of neonatal thrombocytopenia and thrombocytosis
- Know the clinical indications for use of blood products in neonates, as well as the manifestations and prevention of potential complications of transfusion
- Know the causes and management of excess tearing

## References

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