

RUPTURED NEONATAL SUBGALEAL HEMORRHAGE: CHALLENGES OF MANAGEMENT FROM A RESOURCE LIMITED SETTING

Running title:

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Conflicts of Interest

The authors declare no financial conflicts of interest.

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Abstract

Despite advances in obstetric and neonatal care, subgaleal hemorrhage continues to pose significant challenges to health personnel, especially in poor human resource/facility settings, such as ours. Here, a specialist may not be always readily available, contributing significantly to morbidity and mortality. This study was undertaken to highlight the varying methods of presentation of subgaleal hemorrhage and the need for early identification and management in order to improve outcomes. A confirmed case of ruptured subgaleal hemorrhage was documented over a 12-month period. No mortality was recorded. High index of suspicion is key to early diagnosis. Identification of risk factors, early diagnosis, and prompt and aggressive treatment of hypovolemia will reduce morbidity and mortality.

Key words: Ruptured subgaleal hemorrhage, massage of scalp swelling, neonate.

Introduction

Subgaleal hemorrhage is a collection of blood in the soft tissue space under the aponeurosis, but above the periosteum of the skull.^[1] It is the most serious form of extracranial hemorrhage in newborns and is most often seen after vacuum or forceps-assisted deliveries. However, it can occur even in normal deliveries.^[1-8] The incidence has been estimated to be approximately 1 in 2,500 spontaneous vaginal deliveries without the use of vacuum or forceps. A 10-fold increase has been reported with the use

of forceps. The rate of mortality is reported to be between 12–25%.^[2,6,9] The literature on management of neonatal subgaleal hematomas is relatively rich, none the less this case report focuses on describing management challenges in a low-resource setting and the need for early identification and management to improve outcomes.

Case Report

Baby HA was admitted at age of 5 days on account of swelling of the head noticed at birth and has been increasing progressively.

Baby was delivered to a 23-year-old primipara. Pregnancy was booked at 5month gestation, mother had 4 uneventful visits, there were no perinatal risk factors for sepsis identified; mother had blood tonic prescribed and paracetamol for occasional abdominal pain. There was no history of smoking or alcohol ingestion during pregnancy, she is not a known hypertensive or diabetic and no history suggestive of gestational diabetes.

Delivery was spontaneous and vertex following an initial failed attempt at vacuum delivery. Apgar scores were 8 and 9 at one and five minutes respectively, birth weight of 3.3kg, length of 56 cm and head circumference of 32 cm. Both baby and mother were discharged home 3 hours after delivery. At home, mother was massaging baby's head with rag soaked into hot water but with increasing swelling of the head and increased softening of swelling, baby was taken to a secondary medical facility where they were admitted for 2 days during which some medications were given which mother do not know but with baby's clinical condition worsening, baby was referred to a tertiary facility.

Comment [U1]: IT IS IMPORTANT TO INDICATE IN THE CASE PRESENTATION THE FAILED ATTEMPT TO USE VACUUM)

Major findings at presentation were an acutely ill baby, febrile (38.2), deeply jaundiced with severe pallor, weight = 3.4 kg, occipitofrontal circumference = 40cm. respiratory rate = 68/ minute; Broncho vesicular breath sounds, there were no crepitations. Baby had tachycardia with heart rate of 220 beats per minute. The baby was conscious but lethargic with normotensive anterior fontanelle. He had generalized head swelling involving the right parietal to occipital region, soft in consistency with some areas of tenderness, findings on abdominal examination were normal (Figure 1).

A working diagnosis of a 5 days old term baby with subgaleal haemorrhage complicated by severe anaemia, hyperbilirubinaemia, presumed sepsis and hypovolaemic shock was made. Investigations done reveals a PCV of 13%, random blood glucose of 1.4mmol/L, FBC reveals PCV 13%, WBC 6.0×10^9 /L, N = 58%, L = 30%, E = 06%, M = 06%, Platelets = 73×10^9 /L, serum bilirubin was Total = 10.8mg/dl, conjugated 9.8mg/dl (90% conjugated), Blood culture did not grow any organism. Transfontanelle scan reveals normal cerebral and cerebellar hemispheres with large collection in the scalp? organized haematoma.

After an initial administration of 20mls/kg of normal saline, baby had a double volume exchange blood transfusion using 544mls of fresh whole blood, was also commenced on antibiotics – IV Ampicillin/Sulbactam at 150mg/kg/day in two divided doses and IV gentamycin at 5mg/kg/day, IVF 4.3% Dextrose in 0.18 saline at 120mls/kg/day and phototherapy. Within 48 hours of admission, clinical condition is improved but post – EBT PCV was 30% necessitating a top-up transfusion of 15mls/kg of packed cells.

By the 7th day of admission, baby was noticed to be bleeding actively from a darkly pigmented area on the right parietal region of the scalp, bleeding however continued despite application of dressing over the area, this necessitated surgical evacuation of the haematoma with another transfusion of 15mls/kg of packed red cells after which bleeding stopped and baby continue to improve, head circumference dropped from 40cm to 34cm (Figure II).

Baby was discharged home at age 30days, 25 days into admission. Was seen a week following discharge and is in stable clinical state.

Discussion

Comment [U2]: the discussion should be enriched with more data on the subject

Subgaleal hemorrhage is an accumulation of blood in the loose connective tissue of the subgaleal space.^[1] and it can occur following a normal delivery, forceps-mediated delivery, or caesarean section. It is the most serious form of extracranial hemorrhage in newborns.^[1,5,6,10] It occurs most frequently following vacuum-assisted delivery. The incidence has been estimated to be approximately 1 in 2,500 spontaneous vaginal deliveries that did not involve the use of vacuum or forceps. A 10-fold increase in the incidence of this condition was observed with the use of forceps. (delete, this paragraph is found in the introduction) These infants usually present at birth or within a few hours following delivery, and the risk of death increases with delays in identifying the condition and initiating aggressive treatment.^[11] Acute renal failure from hypovolemia and coagulopathy are poor prognostic factors and most be controlled through fluid administration and blood transfusions^[6, 8] Mortality is reported to be between 12-25%.^[1,2] The literature on subgaleal hemorrhage in Nigeria is limited,^[8] though many cases have been observed worldwide.

Most documented cases occurred following assisted modes of delivery, such as those that use vacuum and forceps. However, this condition can also occur following caesarean deliveries or at other times following normal deliveries.^[1-7] Subgaleal hematoma can also occur in children following minor head trauma¹². The case we have reported here, occurred following an attempted vacuum that failed. The baby's head was observed to be enlarged within 24 hours following delivery, and it progressively increased in size. The parents were using a rag soaked in warm water to massage the swollen scalp, but the baby later presented in the hospital with hypovolemic shock and severe anemia. The baby initially had normal saline administered to correct the hypovolemic shock followed by an exchange blood transfusion. The swelling later ruptured with blood oozing, necessitating drainage of the blood with daily dressing of the wound packed with sterile gauze. The rupture may have been a result of the warm compress and /massage performed repeatedly prior to presentation at the hospital, thereby weakening the tissue and causing the rupture. We advise that babies delivered through vacuum or attempted vacuum be closely observed for complications of subgaleal hemorrhage with prompt management to reduce mortality.

Conclusion

In conclusion, neonatal subgaleal hemorrhage is an important cause of morbidity and mortality. Identification of risk factors, close observation with aggressive management of complications will significantly improve outcome.

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Figure Legends

Figure 1: Baby's condition at presentation prior to EBT and top-up blood transfusion showing severe pallor with enlarged head.



Figure 2: Baby's condition after EBT and top-up blood transfusion showing the site of rupture on the scalp and improvement of pallor following blood transfusion.

