

Case Report

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Newborn with spontaneous rupture of an infected cephalohematoma

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ABSTRACT

Cephalohematomas present in approximately 2% of newborns and rarely become infected. In this case we present a newborn who presented with spontaneous rupture of an infected cephalohematoma with *E. Coli*. The patient subsequently developed scalp osteomyelitis secondary to the infected cephalohematoma. In this case report we will go over the presentation and the management of the case.

Keywords: Cephalohematoma, *E. coli*, Infected cephalohematoma, Meningitis, Osteomyelitis

INTRODUCTION

Cephalohematomas occur in about 2.5 percent of newborns.¹ They are usually secondary to traumatic deliveries (commonly occurring during a prolonged second stage of labor) and instrument-assisted deliveries. Cephalohematomas are typically self-resolving within weeks and complications are rare. When complications occur they consist of anemia, hyperbilirubinemia and infection of hematoma.² The etiology of infected hematomas has been linked to direct extension from needle aspiration, scalp infection or electrodes and hematogenous spread in the setting of bacteremia or meningitis.³ Complications of an infected cephalohematoma include epidural abscess, subdural empyema and cranial osteomyelitis.⁴ This case report describes the presentation, hospital course and management of an infected cephalohematoma with an associated osteomyelitis.

CASE REPORT

A 17-day old term male born via vacuum assisted spontaneous vaginal delivery to an adequately treated GBS positive mother presented to the ED with a large

right cephalohematoma that began draining bloody fluid. Ten days prior to admission parents reported a temperature of 100°F but patient continued to have adequate oral intake with good urine output at the time. Two days prior to admission parents noticed enlarging cephalohematoma and increased spitting up. In the ED he was noted to be afebrile with a large, boggy cephalohematoma on the right side of the head. There was cloudy blood tinged fluid oozing from the most anterior portion of the cephalohematoma. A full sepsis work up was done in the ED. He was admitted to the hospital for intravenous antibiotics.

Physical exam consisted of a well appearing infant with anterior fontanelle open, soft and flat. He had a large, boggy and tense cephalohematoma extending from the right mid parietal region to mid occiput. There was drainage of yellow and bloody fluid with minimal pressure. He was awaking and moving all extremities with a strong suck and normal neurological exam.

CBC showed elevated white blood cell count of 23, 000 with 43% segmented neutrophils, 5% bands, 23% lymphocyte and 19% monocytes. Wound cultures were obtained prior to starting antibiotics. Preliminary gram stain of wound culture showed gram negative rods.

Cerebrospinal fluid showed a cell count showed 3 WBCs and 4 RBCs, glucose of 42 and protein of 38. MRI of his head showed a large right scalp cephalohematoma with underlying bony changes concerning for osteomyelitis.

He was taken to the operating room where an incision and drainage procedure was performed of the infected cephalohematoma. He did have bony involvement visualized but no specimen was collected. His wound culture grew *Escherichia coli* in less than 24 hours. Blood, urine and cerebrospinal fluid cultures were negative.

DISCUSSION

Cephalohematomas are subperiosteal hemorrhages that do not cross suture lines.³ They occur in approximately 1-2% of normal spontaneous vaginal deliveries but can be as high as 4% in vacuum or forceps assisted deliveries.³ Infection of a cephalohematoma is very rare. Blom et al located only 27 cases reported between 1818 and 1993.⁵ It is even rarer to have an underlying osteomyelitis develop in such cases. Staudt et al found only 17 cases of osteomyelitis in 81 total cases of infected cephalohematomas.⁶ It is hypothesized that cephalohematomas can become infected via different routes. Hematogenous spread is believed to be causative in many cases. The blood found within the cephalohematoma is a good medium for bacterial growth.

An infected cephalohematoma is often clinically evident. The area usually expands with overlying erythema, fluctuance, and fever is commonly associated. Our patient also had drainage of pus from the infected area. If a cephalohematoma is suspected to be infected, rapid diagnosis and treatment should follow as osteomyelitis, bacteremia, and meningitis are serious sequelae. Wound culture and gram stain should be obtained from the cephalohematoma. Blood and CSF studies, including cultures, should also be obtained. Finally, magnetic resonance imaging should be strongly considered for suspected underlying osteomyelitis.

Early broad-spectrum antibiotics are vital for these patients after all cultures are collected. The most common causative agents of an infected cephalohematoma are *E. coli* and *S. aureus* and antibiotics should be tailored to these bacteria.² However, other case reports have found other staph species, group B *streptococcus*,

Pseudomonas, *Salmonella*, *Proteus*, *Bacteroides*, *E. hermanni* and *Gardnerella*.² After diagnostic tests and initiation of antibiotics, patients require incision and drainage. If an underlying osteomyelitis or abscess is present then surgical debridement is needed.⁷ Antibiotics can be narrowed once cultures have grown an organism. However, the majority of these patients require extended courses of antibiotics especially in cases of meningitis.

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