

Scalp Abscess Developing Dura Mater Extension in a Newborn Infant : A Case Report

Kyung Hee Park, M.D., Ryoung Kyoung Lim, M.D., Ah Young Kim, M.D., and Shin-Yun Byun, M.D.

Department of Pediatrics, School of Medicine, Pusan National University, Busan, Korea

The risk factors associated with neonatal scalp abscess include electrode insertion for fetal scalp monitoring, traumatic scalp lacerations, and sepsis or meningitis. We report a case of neonatal scalp abscess with extension to dura mater, although our patient had no known risk factors. A 18-day-old, full-term baby was referred to the our hospital to evaluate a swelling over his left occipital scalp. A full sepsis work-up was performed and all were negative. Cranial sonography revealed echogenic cystic mass with peripheral vascularity consistent with ruptured epidermoid cyst or scalp abscess. The computed tomography (CT) scan of head was performed because of possibility of ruptured epidermoid cyt and revealed 2.0×2.0 cm sized hyperattenuating mass with suspicious intracranial extension. The magnetic resonance imaging (MRI) of head revealed the presence of 1.4×1.1 cm sized peripheral rim enhancing mass at left occipital area consistent with scalp abscess. And also, the lesion was suspicious dural exposure at left temporal area. Clinicians should be aware that scalp abscess may occur without any risk factors and perform diagnostic workup including a complete sepsis evaluation, cerebrospinal fluid analysis (CSF), and cranial imaging study to screen for intracranial extension.

Key Words : Scalp abscess, Newborn, Dura mater extension

Neonatal scalp abscess is a rare but potentially lethal neonatal emergency. The risk factors associated with scalp infection in a neonate include electrode insertion for fetal scalp monitoring, traumatic scalp lacerations and needle aspiration of a hematoma. Neonatal scalp abscess also occurs as a consequence of sepsis or meningitis. Diagnostic workup of a suspected neonatal scalp abscess includes a complete sepsis evaluation, including CSF analysis, cranial imaging study such as ultrasonography, CT or MRI. Treatment includes a incision and drainage and subsequent intravenous antibiotics. We report a case of neonatal scalp abscess with extension to dura mater, although our patient had

no known risk factors such as fetal scalp monitoring, traumatic scalp lacerations, needle aspiration of a hematoma, sepsis, or meningitis.

Case report

A 18-day-old, full-term baby was referred to our hospital to evaluate a swelling over his left occipital scalp. The patient had been born at 40⁺4 weeks gestation by uncomplicated vaginal delivery and weighed 2,800 g at birth. During delivery, scalp blood sampling, forceps and vaccum were not employed. Mother reported that the baby has had that swelling lesion with smaller size at birth. Mother said that the lesion was slightly erythematous and rubbery on initial presentation. The patient was afebrile and fed well. His pulse was 140 bpm, rectal temperature was 36.5°C, and the respiration rate was 40 rate/min. Scalp examination revealed a 2×1 cm erythematous in-

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Correspondence : Shin-Yun Byun, M.D., Department of Pediatrics,
Pusan National University School of Medicine, 20 Geumo-ro,
Mulgeum-eup, Yangsan-si, Gyeongnam, 626-770, Korea

Tel : +82-55-360-2180, Fax : +82-55-360-2181

E-mail : byun410@hanmail.net

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durated swelling over left occipital area. Palpation of the swelling made the infant feel painful. A full sepsis work-up including CSF analysis was performed and all was negative. The complete blood count (CBC) revealed a white blood cell (WBC) count of 15,000/mm³ with 41.6% neutrophils, 43.6% of lymphocytes and 10.9% of monocytes, a hemoglobin of 13.1 g/dL, and platelets of 438,000/mm³. CSF analysis revealed a WBC of 11 cells/uL (60% of lymphocytes and 40% of monocytes) and no red blood cell.

Sonography revealed echogenic cystic mass with peripheral vascularity around left temporal area consistent with ruptured epidermoid cyst or scalp abscess. The CT scan of head was performed to know about the lesion exactly because of possibility of ruptured epidermoid cyt and revealed 2.0×2.0 cm sized hyperattenuating mass with suspicious intracranial extension. We decided to perform MRI of brain to confirm whether a intracranial extension exists or not. The MRI revealed the presence of 1.4×1.1 cm sized peripheral rim enhancing mass at left occipital area consistent with scalp abscess. And also,

the lesion was suspicious dural exposure at left temporal area (Fig. 1). On hospital day 4, under general anesthesia and with intratracheal intubation, the patient underwent surgical removal and irrigation of the abscess. The histopathological sections of scalp lesion showed no definite epithelial cell lining. Therefore, ruptured epidermoid cyst was ruled out. Drainage from the wound was cultured and subsequently identified as methicillin-resistant *Staphylococcus aureus* (MRSA). Blood, urine and CSF cultures remained without growth. The patient was given initially cefotaxime, which was continued during hospital admission and was changed to vancomycin to cover the MRSA. The baby did well and was discharged after 6 weeks of intravenous vancomycin. The baby was doing well at age 6 months without any sequelae.

Discussion

Neonatal scalp abscess usually occurs as a complication of fetal scalp monitoring and occur in 0.1–5.4%

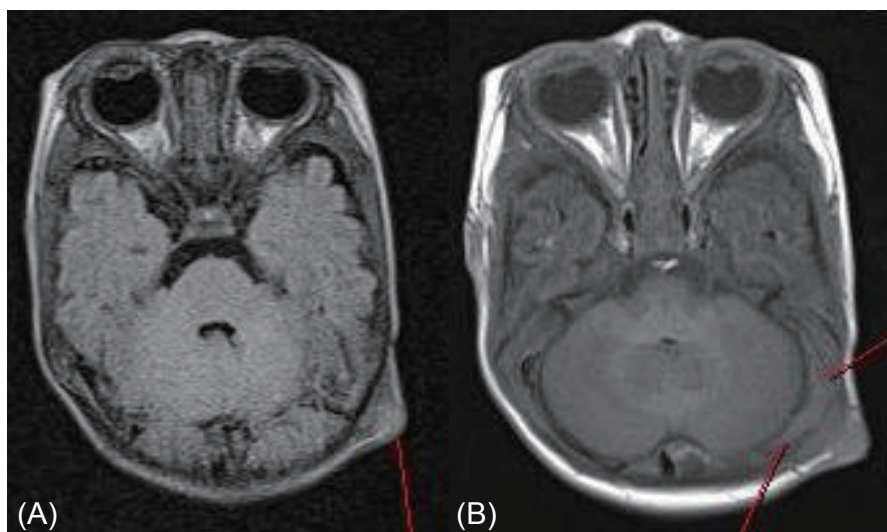


Fig. 1. (A) T2-weighted MRI of brain revealed 1.4×1.1 cm sized peripheral rim enhancing mass at left occipital area. (B) The thickness of dura mater was consistent with dura extension of scalp abscess in T1-weighted image.

of infants who have had peripartum scalp electrodes.^{1,2} The other risk factors include not only traumatic scalp lacerations and needle aspiration of a hematoma but also bacteremia and meningitis.³ Majority of reported cases with neonatal scalp abscess were associated with fetal scalp monitoring.^{4–9} However, our patient was not performed any other invasive procedure including fetal scalp monitoring during whole fetal life and neonatal period. And also, our patient showed localized scalp abscess without evidence of sepsis or meningitis. Therefore, in our patient, the scalp abscess might become infected due to traumatic scalp laceration with unknown event.

Cordero et al. reported that the majority of the neonatal scalp abscesses were localized and self-limited, although some patients suffered from osteomyelitis, cellulitis, and septicemia.² Interestingly, it is presumed that scalp abscess of our patient extend to dura mater directly without osteomyelitis, because the lesion was over the left lamboid suture.

Scalp abscess usually begins as small indurated masses which become fluctuant and suppurative.¹⁰ It should be differentiated from cephalohematoma, caput succedaneum, herpes simplex infections, and neonatal rashes such as erythema toxicum and pustular melanosis. It was unlikely that the scalp abscess of our patient was due to infected cephalohematoma because the lesion was a small sized, rubbery and localized on scalp on initial presentation without no evidence of cephalohematoma.

A complete sepsis evaluation, including CSF analysis, empiric intravenous antibiotics, and hospital admission were recommended to evaluate the patient with suspicious scalp abscess.¹¹ Based on our case, cranial imaging to screen for intracranial extension should be considered. Cranial ultrasound is a suitable tool initially. In case of necessity, CT or MRI was

recommended in consecutive order. Our patient was performed CT and MRI serially due to possibility of ruptured epidermoid cyst on initial cranial ultrasound.

The mainstay of treatment for scalp abscess is a incision and drainage of the wound. However, it is usually required to start the empirical antibiotics until blood, urine, CSF cultures turned to be negative. Thereafter, appropriate antibiotics should be administered by the sensitivities of the cultured organism. The microbiology is predominantly aerobic with *Streptococcus species*, *Staphylococcus edipermidis*, and *Escherichia coli* being the most common.² Based on several literature review, duration of antibiotics use was not determined. Because our patient reveal positive wound culture for MRSA and extension to the dura mater, we decided to administer vancomycin for 6 weeks in accordance with brain abscess.

In conclusion, clinicians should be aware that scalp abscess may occur without any risk factors and perform diagnostic workup including a complete sepsis evaluation, CSF analysis, and cranial imaging study to screen for intracranial extension.

Acknowledgement

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신생아에서 경질막 침범을 동반한 두피 농양 1례

부산대학교 의과대학 소아과학교실

박경희·임령경·김아영·변신연

신생아의 두피 농양의 발생과 연관있는 인자로는 태아 두피 감시, 외상성 두피 열상, 패혈증과 뇌수막염 등이 있다. 저자들은 이와 같은 알려진 위험 인자가 없는 신생아에서 경질막까지 침범하여 발생한 두피 농양을 경험하였기에 보고하는 바이다. 생후 18일된 남아가 왼쪽 후두부 부위의 종창을 주소로 전원되었다. 패혈증, 뇌수막염 등에 대한 검사에서는 모두 정상이었다. 두피 농양을 확진하기 위해 시행한 두부 초음파 검사에서 표피낭종파열 소견이 관찰되어 두부 컴퓨터 단층촬영 검사를 시행하였고 조영증강되는 종괴의 두개 내 침범이 의심되는 소견을 나타내었다. 두부 자기공명영상 검사에서 1.4×1.1 cm 크기의 주변부 조영증강을 보이는 두피 농양으로 진단되었고 이는 경질막 침범을 동반하고 있었다. 특별한 위험인자 없이도 신생아에서 두피 농양이 발생할 수 있음을 인지하고 있어야 할 것이며 이런 경우 패혈증, 뇌수막염 등에 대한 검사를 비롯하여 두부 내 침범 여부를 확인하기 위해 두부 영상 검사가 필요할 것으로 사료된다.

중심 단어 : 두피농양, 경질막 침범, 신생아