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Review Article

Deep neck abscess in neonatal period: Case report and review of literature

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ABSTRACT

Deep neck abscess is very rare in neonatal period. We reported a deep neck abscess caused by methicillin-sensitive *Staphylococcus aureus* infection (MSSA) in a neonate. A 10-day male infant was admitted to our neonatal unit with the complaints of fever, irritability, and refused to food intake. Ultrasonography and magnetic resonance imaging revealed as an abscess in the neck. Needle aspiration from abscess revealed pus. Antibiotics and drainage were applied. We also reviewed the neonatal deep neck abscess reported in English literature and clinical presentation, risk factors, causing microorganisms, treatment, complication and outcome of deep neck abscesses were discussed.

Contents

1. Introduction

A deep neck abscess is defined as a collection of pus in the facial planes and spaces of the head and neck and it can lead to life-threatening complications. Deep neck abscesses are rare in neonatal period [1–16]. Herein, we describe a deep neck abscess, presented as neonatal sepsis, caused by methicillin-sensitive *Staphylococcus aureus* (MSSA) in a neonate. In addition, cases with deep neck abscess reported in the neonatal period in English literature were reviewed.

2. Case report

A 10-day male neonate was referred to our unit with the complaints of fever, irritability, and poor feeding. The infant was born by vaginal delivery after 40 weeks of pregnancy with 3.330 g birth weight. There was no history of birth trauma and invasive procedure. At admission, physical examination revealed the fever: 40.2 °C, heart rate: 186 bpm, respiratory rate: 68 bpm, capillary refill time 4 s, cutis marmoratus, mild jaundice, and the other physical examination findings were normal. The chest radiograph was clear. Initial laboratory examination revealed hemoglobin 14.8 g/dL, white blood cells $24 \times 10^3/\mu L$ and thrombocytes $279 \times 10^3/\mu L$. Toxic granulation was observed on blood smear examination and immature/total neutrophil ratio was 0.2. C-reactive protein level was 83.2 mg/L (normal range: 0–8 mg/L). A lumbar puncture was performed, and there were no white blood cells in cerebrospinal fluid on direct microscopic examination, protein and glucose levels in cerebrospinal fluid (CSF) were 71.2 mg/dL and 72 mg/dL, respectively. Blood, urine and CSF cultures were obtained. He was hospitalized with diagnosis of neonatal sepsis and intravenous vancomycin and cefotaxime were started. After one day of hospitalization, neck swelling was observed (Fig. 1). Ultrasonography revealed that abscess. Magnetic

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Fig. 1. It shows neck swelling on the right side of the neonate.

resonance imaging (MRI) was performed on the second day of admission and revealed a 36 mm × 26 mm × 37 mm right sided, large multiloculated mass spreading to lateral pharyngeal recess (Fig. 2A). The mass was peripherally enhancing after intravenous Gadovist infusion (Fig. 2B). Needle aspiration from abscess revealed pus. The MSSA was grown in purulent material. Blood, urine and CSF cultures were sterile. Cefotaxime and vancomycin were stopped and continued first generation cephalosporin for 14 days. The resolution of abscess was shown on ultrasound and there has not been recurrence. The patient was discharged after 14 days of hospitalization in good clinical condition and without any findings in the neck examination.

3. Discussion

In this manuscript, we report a newborn with deep neck abscesses caused by MSSA infection successfully managed with antibiotics and drainage. In addition, neonatal cases with deep neck abscess reported in English literature were reviewed and clinical presentation, risk factors, causing microorganisms, treatment, complication and outcome of deep neck abscesses were discussed (Table 1).

Although antibiotics therapy has reduced the incidence of deep neck abscess, it remains an important clinical problem because of serous life-threatening complications. Although many investigations about deep neck abscess have been reported in childhood, it has been rarely reported in neonatal period, usually as a case report. Deep neck abscess has been more reported in male newborns and male:female ratio is 2:1 [1,3,4,6,7,9–16]. Most cases do not have any risk factors for deep neck abscess [3,4,6,7,10,12–16], while some cases have predisposing factors such as endotracheal intubation, application of nasopharyngeal continuous positive airway pressure, multiple laryngoscopies, application of suction catheters, congenital malformations (third branchial arch remand or sinus, cystic hygroma) [1,5,6,8,9,11]. If recurrent retropharyngeal abscess occurs, congenital abnormality should be investigated [6]. Our case has no predisposing factors for deep neck abscess.

The most common clinical presentation of the deep neck abscesses is neck swelling, feeding and respiratory problems in neonatal period [1–16]. The clinical presentation of deep neck abscesses at diagnosis included neck swelling [2,3,6,8,9,12–16], fever [3,7,9,11,14–16], feeding problems (dysphagia, poor feeding, regürtitation of the feeds through nose, sialorrhea) [2,3,6,7,9,11,14–16], respiratory problems (tachypnea, stridor, cyanosis, horse crying, grunting and noisy breathing, apneic spells) [1–4,6,9–13,16], central neural system problems (irritability, paraplegia, lethargy, hypotonia in the upper limb) [3,6,7,15], cardiovascular system problems (bradicardia or tachycardia) [8,9]. Some cases with deep neck abscesses may be afebrile [1,2,6,8,10,11]. Our cases presented with fever, irritability, and poor feeding. Neck swelling was observed after one day of hospitalization.

Retropharyngeal mass may be showed on a radiograph [1,2,5,9]. Appearance of widening of the retropharyngeal space and reduction of gas image in the retropharyngeal space on lateral film of the neck may be an evidence of deep neck abscesses. Coulthard and Isaacs [6] have been reported that lateral of the neck had an 88% sensitivity in diagnosis of retropharyngeal abscess. Ultrasonography can be used for both diagnosis and sonographically guided aspiration of the mass [1]. Abscess, cystic hygroma, goiter, neuronal tumor, encephalocel, hematoma, hemangioma, branchial cleft remand can be seen in retropharyngeal space [1]. Cystic or solid masses can be differentiated with the use of ultrasonography [1]. Computerized tomography (CT) or MRI is the best modalities for diagnosis of deep neck abscesses and complications [4,7,10–16]. In our case, ultrasonography and MRI were used for diagnosis.

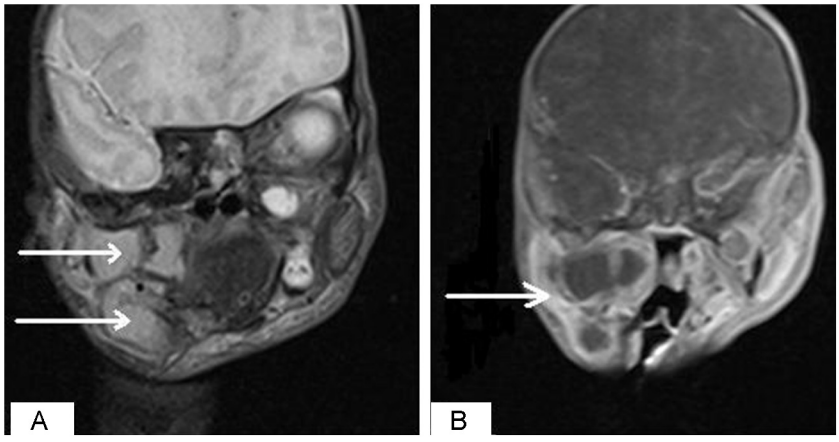

Fig. 2. MRI shows large multiloculated mass spreading to lateral pharyngeal recess (A) and peripherally enhancing after intravenous Gadovist infusion (B).