Infant Neck Abscess: Case Report and Review of Literature

Kuok Wai Seng1, Lee Yan3, Wong Fong Ian3, Jose Esteves Sales Marques2

1Primary Health Section, Centro Hospitalar Conde S. Januario, Macau, China
2Oral Maxillofacial Surgery, Centro Hospitalar Conde S. Januario, Macau, China
3Pediatric and Neonatology Department, Centro Hospitalar Conde S. Januario, Macau, China

Introduction

Neck abscess and deep neck infections (DNIs) are life-threatening disease affecting children. The exact incidence and prevalence rates are unknown [1]. Any age can be affected, but with the rapidly progressive nature, pediatric DNIs require prompt management [2]. They usually originate from the infections of upper respiratory tract and oral cavity. Diagnosis is usually difficult in pediatric patients as it is insidious in onset and children are usually uncooperative in providing the history and being examined [3]. Here, we introduce a case of infant neck abscess who initially presented with fever without focus and then turned to lateral neck swollen. In addition, related literatures were referenced for discussion.

Case Report

A 7-months old infant girl was initially admitted to our unit with the complaints of 5 days duration of fever without focus and poor feeding. She was born full term by cesarean section without any special prenatal and neonatal history. She developed well and had no special past history. On admission, physical examination revealed fever: 39.4°C with stable vital signs and good circulation. The other physical examination findings were normal. Laboratory examination revealed white blood cells 36.5x109/L, neutrophil 55% and Creactive protein 7.72 mg/dl (normal value, <0.5 mg/dl). Urinalysis of catheter urine revealed leukocyte esterase 25 and nitrites negative. She was hospitalized for prolong fever without focus and urinary tract infection cannot be excluded. Empirical antibiotic with intravenous Amoxicillin Clavulanate was started and was then shifted to Ertapanem after the catheter urine culture showed positive for Escherichia coli and the sensitivity test accordingly. However, persistent high fever was noted.

On the second day of hospitalization, swelling (size about 5cm) at the right side of neck at level II-III without skin erythema or bruit was observed. Mumps virus and cytomegalovirus IgM and IgG were both negative. Neck ultrasonography revealed that a heterogenous local fluid collection 30mm x 24mm x 22mm with thickened wall in the lower pole of the right parotid gland (Figure 1). Magnetic resonance imaging (MRI) of the neck was further performed that revealed a peripheral contrast enhancing abscess 51mm x 42mm x 49mm in the right lateral region of the neck with medial extension to the right parapharyngeal space and inferior extension to the level of the right thoracic inlet (Figure 2). Mantoux test was also performed and the result was negative (10mm). Chest radiography also showed no special findings. Eventually, incision drainage of abscess was performed. The pus culture developed Methicillin susceptible Staphylococcus aureus (MSSA) with multidrug resistance (MDR). Therefore, intravenous Vancomycin was also covered for infection control. Fever gradually subsided and ultrasonographic control revealed that there was no new fluid collection. The patient was discharged after 27 days of hospitalization in good clinical condition and without any special findings on the neck examination.

*Corresponding author: Kuok Wai Seng, Primary Health Section, Centro Hospitalar Conde S. Januario, Macau, China, E-mail: edmondwks@yahoo.com.hk

Rec Date: May 12, 2016, Acc Date: May 23, 2016, Pub Date: May 23, 2016.

Citation: Kuok Wai Seng, Lee Yan, Wong Fong Ian, Jose Esteves Sales Marques (2016) Infant Neck Abscess: Case Report and Review of Literature. BAOJ Pediat 2: 012.

Copyright: © 2016 Kuok Wai Seng, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.
Discussion

Neck abscess and deep neck infections (DNIs) are diseases affecting children. If they are not diagnosed and treated promptly, it may lead to airway compromise and spread of infection to neighboring compartments. DNIs can be categorized into peritonsillar, retropharyngeal, and parapharyngeal abscesses depending on the sites of infections. The most common predisposing factors are tonsillitis and upper respiratory tract infection while sinusitis, odontogenic infection and cervical adenitis are other factors of infection [3]. Diagnosis is usually difficult in pediatric patients as it is insidious in onset. The most common symptoms are fever and painful swelling of neck. Neck masses or nuchal pain is the other common presentations of DNIs. One study shows that it is common in retropharyngeal (66.7%) and parapharyngeal (94.1%) abscesses, but it is less common compared to peritonsillar abscesses (4.8%) [4].

Neck masses can be induced by congenital and acquired lesions. The majority of congenital lesions are cysts, whereas most acquired lesions are infectious origin. When differentiating neck abscess, congenital cyst with infection should also be considered as it was noted more frequently in pediatric patients when compared with adults [5]. Thyroglossal duct cysts and branchial cleft cysts are the two most common congenital lesions and they present with mass in the midline of neck and lateral neck respectively [6]. Branchial cleft cysts usually are not detectable until the second or third decade of life [6]. Branchial cleft cysts that manifest in early childhood usually present with an acute and painful enlargement of the cysts secondary to upper respiratory tract infection. An infected branchial cleft cyst can progress to an abscess or rupture spontaneously to form a draining sinus tract. Secondary infections from cutaneous organisms, most commonly Staphylococcus aureus and group A beta-hemolytic streptococci, cause purulent drainage and erythema and edema [6]. Mycobacterial infections are other origins of acquired lesions to be considered as China, Macau SAR is located in areas of high incidence of tuberculosis. The estimated incidence rate of China, Macau SAR in 2014 is 82 per 100,000 population [7]. Mycobacterium tuberculosis as a cause of cervical adenopathy is associated with pulmonary tuberculosis. The most common site of mycobacterial infection in the neck is the anterior superior cervical region, followed by the posterior cervical, middle cervical supraclavicular and submental regions. Cervical adenopathy is usually bilateral and resistant to antibiotic therapy. Anti-tuberculosis chemotherapy is the current treatment modality for Mycobacterial tuberculosis infection [8]. Surgical excision has a high rate of recurrence and formation of fistula [8]. The presentation of unilateral lateral neck mass in this case can be a pure infection or an infected congenital lesion which is clinically not differentiable. Following control of the underlying infection, patient should be reassessed and surgical removal if suggested of congenital lesion so as to prevent further recurrence.

Imaging plays an important role for diagnosis and to identify the anatomical location and extent of involvement of neck abscess. One study shows that clinical evaluation underestimates the extent of DNIs which may lead to conservative treatment with worse prognosis. Consequently, cross-sectional imaging plays an important role for correct evaluation of such infections [9]. Ultrasonography (USG) is a non-invasive approach and does not involve ionizing radiation or require sedation. Therefore, it is the first choice of imaging study in children. On USG, an abscess presents with ill-defined, irregular fluid collection with thick walls and internal debris. The adjacent soft tissue and subcutaneous layer may appear edematous [10]. It also assists in identifying complications such as venous thrombosis or carotid involvement and safely provides image-guided aspiration. Cross-sectional imaging including magnetic resonance imaging (MRI) and CT serve as an important supplementary role. On MRI, an abscess typically presents with low T1W and high T2W signal intensities. Rim or thick peripheral enhancement is often seen in a mature neck abscess. On CT, an abscess usually presents with a uniloculated or multi-loculated low attenuation lesion with rim enhancement. Internal gas collections may be present and the adjacent subcutaneous and fascial fat planes are commonly obliterated [10]. With the absence of ionizing radiation, MRI is advantageous to CT. MRI is also a good imaging method for differential diagnosis and topographical characterization of vascular malformations and tumors of cervical area in children [11]. Our case has a typical imaging of abscess which presents as a heterogeneous fluid collection on USG and a peripheral contrast enhanced low T1W signal intensity on MRI. USG is a good examination for preliminary assessment with its imaging characteristics while MRI can provide more delicate cross-sectional imaging and without ionizing radiation.

The treatment modalities include medical therapy and surgical drainage. Intravenous antimicrobial therapy is the first treatment option. The bacteriology is usually polymicrobial, involving both aerobic and anaerobic bacteria according to the primary source. The most common pathogens are Staphylococcus aureus and Viridans streptococci [3, 5]. Initial empiric antimicrobial therapy should include broad coverage for beta-lactamase–producing bacteria and subsequent adjustment should be implemented if culture result is obtained. Community-acquired MRSA infections become more prevalent and clinical risk factors are not helpful in...
choosing patients who may have a higher risk for MRSA infection. Therefore empiric antimicrobial therapy should also be considered for this field [12]. Antimicrobial therapy alone can be the treatment modality for some of the cases [13]. However, for cases with abscess size ≥20 mm, it is associated with failure of medical treatment and surgical intervention is usually recommended [14, 15]. Other clinical factors should also be considered in decision making. The pathogen of our case is MSSA. Even it has multi-drug resistance but is supposed to be sensitive to Amoxicillin Clavulanate and Ertapenem. The poor clinical response might be due to the large size of abscess. As a result, prompt surgical intervention should be decided once exclusion of mycobacterial infection.

Conclusion

Neck abscess and deep neck infections (DNIs) are life-threatening disease affecting children that require prompt diagnosis and management. Fever, painful swelling of neck or neck masses is common presentations. Thorough physical examination should be conducted for patients, especially in infants, with fever of no focus. An infected unilateral neck mass can be a pure infection or an infected congenital lesion. Following control of the underlying infection, patient should be reassessed to exclude congenital lesion. Mycobacterial infection should be excluded in area with high incidence of tuberculosis. USG is the first choice of imaging study and MRI is a supplementary examination which is both non-invasive and radiation free. The most common pathogens are *Staphylococcus aureus* and *Viridans streptococci*. Initial empiric antimicrobial therapy should include broad coverage for beta-lactamase–producing bacteria. Surgical intervention is usually recommended if abscess size ≥20 mm.

References