

CASE REPORT

Unilateral Parotid Gland Enlargement in Newborn: Is it Suppurative Parotitis?

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ABSTRACT

Acute neonatal suppurative parotitis (ANSP) is a rare disease and a novel illness affecting newborns and premature neonates are more likely to contract it. A unilateral parotid swelling and pus discharge from the Stensen's duct is pathognomonic and sonography is the first line tool to supplement the diagnosis of parotitis. An appropriate parenteral antibiotic therapy and adequate hydration are the mainstays of treatment. Herein, we report a case of ANSP in a 12-day-old baby girl with a 48-hour history of left pre-auricular swelling where a complete resolution of disease was achieved post-treatment.

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intravenous antibiotic and adequate hydration, however in the circumstance of clinically non-responsive or with complications, surgical drainage is advocated.

INTRODUCTION

Acute neonatal suppurative parotitis (ANSP) is a rare disease that is distinguished by the unilateral swelling of the parotid gland and the presence of purulent discharge originating from the Stensen's duct. Bilateral presentation of ANSP is an extremely rare occurrence. The onset of ANSP is rapid, typically occurring within a span of one to two days. The age range of children most affected is typically from a few days to one month old (1). Its occurrence in infancy has been recorded as 3.8:10,000 and it is predominant among boys (2). Nutrient deprivation, low birth weight, trauma to the oral cavity, infection, and immunosuppression have all been recognized as risk factors for ANSP (3). Dehydration has generally been found as an aetiology of suppurative parotitis in both paediatric and adult populations as it causes ascending infection from the oral cavity which results from salivary stasis. The hematogenous spread of infection was reported less commonly as part of septicemia in association with neonatal sepsis or pneumonia (4). The most prevalent causal agent is *Staphylococcus aureus*, but other gram-negative, gram-positive, and anaerobic species have also been discovered (3). The diagnosis of ANSP is primarily clinical and an ultrasonography of parotid gland aids with the diagnosis and exclusion of abscess formation. ANSP generally has a good prognosis with early commencement of appropriate choice of

CASE REPORT

A 12-day-old, exclusively breastfed healthy baby girl born full term via elective caesarean section, presented with left pre-auricular swelling for two days associated with fever and reduced oral intake. Antenatally, the mother suffered multiple underlying comorbidities; Type 2 Diabetes Mellitus, morbid obesity and essential hypertension with superimposed pre-eclampsia. Postnatally, the child was discharged home well. There were no known predisposing factors and the child had no history of trauma or insect bites. Clinically, the child was not septic looking, not in respiratory distress, and had no gross facial asymmetry. Clinical examination revealed left pre-auricular swelling measuring 2 x 3 centimetres (cm) and the skin surrounding the swelling was erythematous extending to the left ear lobule. (Fig. 1(a)) The swelling was firm in nature and tender on palpation. Otherwise, there were no palpable cervical lymph nodes. Intraoral examination showed pus discharge from the left Stensen's duct upon milking the left pre-auricular swelling. (Fig. 1(b)) No abnormalities were detected at other subsites of the oral cavity and oropharynx. An otoscopy examination revealed an oedematous left external auditory canal (EAC) and the left tympanic membrane was obscured. The right ear and other ENT examinations were unremarkable.

The clinical diagnosis of ANSP was deduced to correlate with the neonatal age and pathognomonic features of



Figure 1: Clinical picture of: (a) left pre-auricular swelling with erythematous overlying skin; and (b) evidence of purulent discharge from left Stensen’s duct.

unilateral enlargement of the left parotid with purulent discharge from the Stensen’s duct. A bedside flexible nasopharyngolaryngoscopy revealed normal findings. The laboratory testing of full blood count reported an elevated total white cell count of $29.4 \times 10^9/L$ with a predominance of neutrophil, raised C-reactive protein, and other summaries of blood investigations on admission of the child are shown in Table 1.

Table 1: Summary of blood investigations on admission

Investigations	
<i>Hematology</i>	
1. Full blood count	
Total white cell count	$29.4 \times 10^9/L$
Haemoglobin	17.5 g/dL
Platelet	$380 \times 10^9/L$
<i>Biochemistry</i>	
2. Renal profile	
Urea	2.0 mmol/L
Sodium	134 mmol/L
Potassium	4.2 mmol/L
Creatinine	36 mmol/L
<i>Others</i>	
C-reactive protein	18mg/L

An ultrasonography of the left parotid gland showed hypoechoic enlargement of the left parotid gland, measuring $1.6 \times 2.8 \times 2.7$ cm (Fig. 2) with increased vascularity within. (Fig. 3) There was no evidence of focal collection. The right parotid gland is normal.

The pus for culture and sensitivity isolated *Staphylococcus aureus* which is sensitive to erythromycin, oxacillin, and penicillin G. The child was commenced on intravenous antibiotic (Cloxacillin 50 milligram/kilogram (mg/kg) 8 hourly) for seven days and daily warm compression with parotid massage was applied. A complete resolution of disease was achieved upon completion of intravenous antibiotic where clinically the child was afebrile with normal oral intake, the left pre-auricular swelling has completely subsided and an otoscopic examination revealed normal findings. In the subsequent outpatient



Figure 2: Sonographic image showing heterogeneously hypoechoic enlarged left parotid gland.

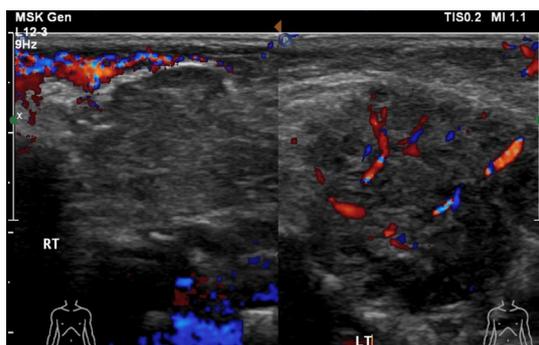


Figure 3: Sonographic images showing increased vascularity within the left parotid gland in comparison to the right.

clinic follow-up at one month of age, the child was well.

DISCUSSION

ANSP is a rare disease and it has a neonatal prevalence of 3.8:10,000 with a male predominance of 3:1 (1,2). The parotid gland exhibits a higher susceptibility to infection when compared to other salivary glands. This can be attributed to its distinctive release of serous fluid, which lacks the bacteriostatic characteristics found in the mucoid component (3). The diagnostic criteria of ANSP according to Spiegel et al. consisted of the triad of: parotid swelling; the presence of purulent exudative discharge from the Stensen’s duct; and a culture of the pus yielding growth of pathogenic bacteria (2,3). In this reported case, ANSP was clinically diagnosed based on the pathognomonic features of unilateral parotid enlargement with demonstrable pus discharge from the Stensen’s duct and yielded a positive *Staphylococcus aureus* from pus culture and sensitivity.

Several predisposing risk factors of ANSP have been reported such as the mode of delivery, prematurity, trauma to the oral cavity, dehydration, mastitis, breast-feeding infants, contaminated breast milk, and low birth weight (3). The authors believed that the child was almost free of typical gut bacteria as compared to newborns who delivered via vaginal delivery where they can establish infection from the gut floras such as Bifidobacteria and Bacteroides. Since the child was

exclusively breast-feeding, the possible factors which may contribute to the cause of ANSP can be: 1) flora of the mother's skin dominating the oral bacterial flora or the possibility of skin colonization by *Staphylococcus aureus* from the mother; 2) dehydration through inadequate breastfeeding owing to slow production of breast milk in the early post caesarean section period; and 3) ascending duct infection related to decreasing salivary flow.

Staphylococcus aureus is the most common causative pathogen and less frequent isolated organisms are other Gram-positive cocci (*Streptococcus species*), Gram-negative bacilli (*Escherichia coli*, *Pseudomonas aeruginosa*), and rarely anaerobic agents (3). Besides the classical clinical features, the diagnosis of ANSP in this case was aided by a positive pus culture and sensitivity which demonstrated *Staphylococcus aureus* along with the presence of leucocytosis and a raised C-reactive protein in serology investigation. While radiography imaging is not mandatory in the diagnosis of ANSP, ultrasonography is a useful tool to exclude complications, such as a parotid abscess. It is economical, easy to perform, readily available, and safe as it is non invasive and without ionizing radiation. Many reported rather consistent ultrasonography findings such as enlargement of parotid gland with hypoechoic areas, increased vascularity, and presence of intra-parotid lymph node (3-5). Similarly in this case, the ultrasonography of the parotid gland was consistent, showing hypoechoic enlargement of the left parotid gland with increased vascularity. In this case, sonography provided a morphological evaluation of the gland that matched our clinical examination, facilitating prompt treatment. However, if sonography alone cannot provide a definite diagnosis, the next option is magnetic resonance imaging, which allows for the evaluation of the deep lobe of the parotid gland and the appreciation of microabscesses within the gland (1).

The administration of parenteral antibiotics resulted in a complete recovery for the majority of patients (2). Considering that the primary route of infection involves the ascending of pathogens from the oral cavity, it is advisable to employ a combination treatment consisting of aminoglycoside and anti-staphylococcal for a duration of one to two weeks (1,2). With optimum antibiotic therapy, the reduction of parotid swelling coupled with clinical improvement within a time frame of one to two days can be anticipated and Spiegel et al. reported that in three-quarters of the cases of ANSP, antibiotic

therapy was adequate to achieve a favourable outcome. (2). Surgical drainage is advocated only in fewer cases when the cultured organism is resistant to the empirical antibiotic and when there is procrastination in seeking medical treatment. Examples of complications include facial nerve palsy, disease extension to the external auditory canal, salivary fistula, osteomyelitis and mediastinitis (4). Since ANSP is not common and most cases are resolved with treatment, there have been no recurrent cases reported thus far.

CONCLUSION

Despite ANSP being a rare case, the diagnosis was straightforward because the child was referred early to a tertiary centre with ENT expertise and exhibited the classical triad of ANSP. The authors chose ultrasonography as the first readily available tool, allowing for a prompt diagnosis and timely treatment initiation, leading to successful outcomes and the prevention of complications. The authors firmly believe that emphasizing knowledge, sound clinical judgement and prompt treatment in cases of simplicity should not be overlooked, as they are vital for improving prognosis.

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