

## CASE REPORT

## Group B streptococcal neonatal parotitis

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**SUMMARY**

Acute neonatal parotitis (ANP) is a rare condition, characterised by parotid swelling and other local inflammatory signs. The most common pathogen is *Staphylococcus aureus*, but other organisms can be implicated. We describe the case of a 13-day-old term newborn, previously healthy, with late-onset group B *Streptococcus* (GBS) bacteraemia with ANP, who presented with irritability, reduced feeding and tender swelling of the right parotid. Laboratory evaluation showed neutrophilia, elevated C reactive protein and procalcitonin, with normal serum amylase concentration. Ultrasound findings were suggestive of acute parotitis. Empiric antibiotic therapy was immediately started and adjusted when culture results became available. The newborn was discharged after 10 days, with clinical improvement within the first 72 h. Although *S. aureus* is the most common pathogen implicated in ANP, GBS should be included in the differential diagnosis.

**BACKGROUND**

Acute neonatal parotitis (ANP) is a rare condition, characterised by parotid swelling and tenderness, with or without purulent discharge from the Stensen's duct. ANP can be accompanied by fever, irritability and other non-specific symptoms. The most common aetiological agent is *Staphylococcus aureus*, but other organisms can be implicated, including streptococci, Gram-negative bacilli and anaerobes. We describe a case of a 13-day-old newborn with late-onset group B *Streptococcus* (GBS) bacteraemia associated with ANP as a focal presentation.

**CASE PRESENTATION**

A 13-day-old breast-fed male neonate presented with a 1-day history of irritability and reduced feeding, without fever. He was born to a healthy mother at 38 weeks of gestation by vacuum delivery, after an uneventful pregnancy, weighed 3110 g at birth and had 9 and 10 Apgar scores at the first and fifth minutes, respectively. Maternal vaginal and rectal GBS cultures were negative 2 days before delivery. There was no prolonged rupture of membranes and no perinatal complications.

On admission, the baby was irritable but non-toxic appearing, clinically well hydrated, with a temperature of 37.1°C, normal reactivity and proper muscle tone. His weight was 3295 g, blood pressure 77/36 mm Hg and heart rate 152/min. Examination revealed mild erythaema and tender swelling of the right preauricular and submandibular regions (figure 1). No purulent material exuded from the Stensen's duct when pressure was applied

to the parotid gland. The rest of the examination was unremarkable.

**INVESTIGATIONS**

Laboratory results were: white cell count 14 200/ $\mu$ L (12 330 neutrophils/ $\mu$ L); haemoglobin 15.5 g/dL; C reactive protein 22.5 mg/L (normal <1 mg/L); procalcitonin 23.5 ng/mL (normal <0.5 ng/mL) and serum amylase concentration 20 UI/L (normal <110 UI/L). The two blood cultures grew GBS.

Ultrasound examination revealed unilateral enlargement of the parotid gland, with heterogeneous texture and increased vascularity, with internal and adjacent reactive lymph nodes, with minimal oedema of the adjacent soft tissues—findings compatible with acute parotitis.

**DIFFERENTIAL DIAGNOSIS**

The differential diagnosis should be made with lymphadenitis, cellulitis, soft-tissue abscess or non-infectious aetiologies.<sup>1–5</sup>

Cellulitis-adenitis syndrome represents another possible focal manifestation of late-onset GBS infection, which is more common than parotitis, with an incidence estimated at 4%.<sup>6</sup> Bacteraemia is present in up to 90% of the cases and there can be meningitis associated in 33%.<sup>7</sup> Similarly to ANP, it presents with inflammatory signs typically involving unilateral facial or submandibular regions,<sup>7</sup> which can be hard to distinguish from parotitis.



**Figure 1** Neonate with parotid gland inflammatory signs.



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Ultrasound findings can confirm the diagnosis,<sup>1 4 8</sup> as in our case, but the primary inflammation focus can be difficult to recognise if there are simultaneous marked signs of parotitis and cellulitis. However, the management is similar for the two entities.

Ultrasound and other imaging examinations can also be useful to identify soft tissue abscesses requiring surgical intervention, or non-infectious aetiologies of facial swelling such as lymphangiomas, haemangiomas, lipomas or adenomas<sup>1 2 5</sup> that require a specific approach.

### TREATMENT

Intravenous flucloxacillin (25 mg/kg/dose q8) plus cefotaxime (50 mg/kg/dose q8h) were started. On day 3, GBS grew from both blood cultures, and therapy was adjusted to intravenous ampicillin (50 mg/kg/dose q8h) to complete a total of 10 days of treatment.

### OUTCOME AND FOLLOW-UP

The neonate remained afebrile and local inflammatory signs resolved between the third and fourth days of treatment. He was discharged after 10 days of therapy with clinical recovery documented 1 and 4 months later.

### DISCUSSION

ANP is an uncommon disease, with a prevalence of 3.8:10 000 admissions in an Italian study.<sup>9</sup> Although some conditions mentioned in the literature have been associated with ANP, such as male gender, prematurity, dehydration and duct stasis,<sup>1 2 9</sup> we did not identify any risk factor in our case.

*S. aureus* is the most common pathogen isolated, and other agents such as oral anaerobes, Gram-negatives (*Escherichia coli*, *Pseudomonas aeruginosa*) and GBS have been isolated rarely. Until 2009, only four cases of ANP caused by GBS were reported.<sup>3</sup>

Parotitis occurs most frequently due to retrograde bacterial flow from the oral cavity into the gland via Stensen's duct.<sup>2</sup> As in other GBS cases described,<sup>4 8 10</sup> the definitive pathogenesis remains unclear in this case, but the documented GBS bacteraemia and the absence of purulent discharge give better support to the hypothesis of haematogenous dissemination of an unknown primary focus of infection, with secondary parotid focalisation.

The diagnosis is based on clinical findings, with swelling of the parotid gland being a universal sign, while erythema and tenderness are less common. Fever is found in less than half of the cases.<sup>9</sup> Purulent material can exude from the Stensen's duct in cases of suppurative ANP.

Laboratorial results are usually unspecific, with leucocytosis and elevated neutrophils being the most predominant findings.<sup>9 11</sup> The serum amylase level is elevated in only a few cases, probably due to the immaturity of this salivary isoenzyme activity in newborns,<sup>9</sup> rendering it unhelpful to the diagnosis, as in our case. Cultures obtained from blood and purulent material from Stensen's duct are essential for accurate diagnosis and therapy guidance. In this case, cerebrospinal fluid culture was omitted because of the healthy appearance of the neonate and the focalised signs of infection. However, lumbar puncture should ideally be performed to safely determine adequate antibiotic therapy and its duration, as well as for outcome and follow-up purposes, as was carried out in other studies.<sup>3 4 8 10</sup>

Ultrasound and other imaging examinations can be useful to confirm the diagnosis, but are especially relevant in cases of

poor clinical response to the medical treatment, to identify organised abscesses that require surgical drainage. They can also be helpful in making or excluding other diagnosis, such as lymphadenitis, cellulitis or non-infectious aetiologies.<sup>1 2</sup>

The diagnosis of ANP in our patient was performed based on clinical findings and with ultrasonography confirmation. After collecting the blood cultures, empiric intravenous antibiotic therapy with flucloxacillin plus cefotaxime was immediately started, with coverage of the most common pathogens such as *S. aureus*, other Gram-positives such as GBS and Gram negatives. Given the wide bacteriological spectrum, most authors<sup>1 4 5 9 12</sup> recommend starting therapy with an association of an anti-staphylococcal agent plus an effective antibiotic against Gram negatives, with adjustment after the results from cultures are available. A period of 7–10 days of therapy appears to be adequate<sup>1 2 10</sup> and generally leads to clinical improvement within the first 48 h.

Most cases are managed conservatively, with prompt antibiotic therapy and adequate hydration being essential for a good outcome. Surgical intervention is reserved for those rare cases with inadequate response to medical therapy or for those with organised abscesses.

### Learning points

- ▶ Acute neonatal parotitis (ANP) can occur in a healthy newborn without predisposing conditions.
- ▶ The diagnosis depends on clinical findings, with ultrasound confirmation, if needed. Cultures are essential for an accurate diagnosis and optimal therapy.
- ▶ Despite *Staphylococcus aureus* being the most common pathogen of ANP, late-onset group B *Streptococcus* (GBS) infection should be remembered when initiating empirical antibiotic therapy.
- ▶ Prompt antibiotic therapy and adequate hydration are essential for a good outcome, with surgical intervention being reserved for drainage of abscesses.

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