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Case Report

A Complex Presentation of Bilateral Parotid Abscess in An 8-Year-Old Girl: Case Report

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Abstract

Viral infections, including mumps, Coxsackie, Epstein–Barr, and influenza, are the most frequent causes of acute parotitis in children. It poses unique diagnostic and management challenges in pediatric populations, particularly children with underlying health issues. We report a case of an 8-year-old girl who presented with a bilateral painful swelling in the neck extending to the parotid area for seven days upon presentation to the emergency department. The patient's laboratory findings, including elevated inflammatory markers, amylase levels, and imaging results, supported the diagnosis of bilateral bacterial parotic abscess—timely antibiotic treatment led to a favorable outcome in this case. Early recognition and management are critical to prevent complications such as abscess formation and systemic infection spread.

Keywords: *Pediatric; Parotid Abscess; Nephrocalcinosis; Hydronephrosis; Hypertension.*

Introduction

Viral infections, including mumps, Coxsackie, Epstein–Barr, and influenza, are the most frequent causes of acute parotitis in children (1, 2). Less frequent etiologies, including bacterial infection and autoimmune disorders (3, 4). Pathogens can travel upwards from the mouth cavity through Stenson's duct, leading to parotid infection. Viral parotitis typically resolves on its own without treatment. Bacterial parotitis is a rare condition in children that can develop into acute suppurative parotitis (ASP) and perhaps parotid abscess (PA) (5,6). PA poses a significant risk to life since it can potentially spread to nearby tissue, leading to the development of necrotizing fasciitis, mediastinitis, sepsis, and meningitis (7). The high-risk group may exhibit specific characteristics, such as premature delivery, dehydration, prolonged orogastric feeding, immune suppression, and malformations in the parotid duct (3). So far, there have been few reports of children above the age of 6 months with PA (5). The majority of prior instances had unilateral PA involvement (8).

Few reports in neonates, infants, and adults presented with bilateral PA. (3,9,10) However, no reports on bilateral PA in the older children's age group are current. This article describes the case of an 8-year-old girl with pre-existing nephrocalcinosis, grade 1 bilateral hydronephrosis, untreated chronic hypertension, and migraine who presented with a bilateral PA.

Case Presentation

This case report details an 8-year-old girl, fully vaccinated with a history of bilateral nephrocalcinosis, grade 1 bilateral hydronephrosis, untreated hypertension, and migraine managed with Cyproheptadine. She was presented to the Emergency Department (ED) with a seven-day history of fever, initially presenting as flu-like symptoms, which later progressed to a bilateral painful neck swelling extending to the parotid area, notably by her mother, started in the right side. The left and right-side swelling was associated with a spontaneous intraoral pus discharge on the fourth day of the symptoms began. The presence of rabbits and chickens in her home environment was also noted.

Upon examination, she appeared well and obese but not in acute pain or distress. Her initial vital signs showed blood pressure (155/94), a heart rate (117), respiratory rate (20), temperature (39°C), oxygen saturation (98%), and a BMI of 26.09 kg/m^2. The examination revealed bilateral cervical lymph node swelling, extending to the parotid gland, predominantly on the left side, with no fluctuation on palpation. Moreover, it was associated with mild tenderness and erythema on both sides. However, there is minimal pus discharge from the duct opening on the left side intraorally and poor oral hygiene. (Figure 1). Additionally, there was tender cervical lymph node swelling on the left side. Other physical examinations were unremarkable, including the pharynx, ears, chest, and abdomen.

Figure 1*: Back and Frontal Facial Images. A- The back of the head shows bilateral cervical lymph node swelling.* ***B-*** *Frontal facial showing parotid gland enlargement is more prominent in the left.*

Partial septic workups were taken in the ED, as shown in Table 1. Complete Blood Count (CBC), renal function panel, inflammatory markers, and cultures such as urine, blood, and also from the left intraoral parotid swab were sent. Top of Form The CBC showed leukocytosis, mainly neutrophils associated with thrombocytosis. Also, inflammatory markers (erythrocyte sedimentation rate and C-reactive protein) showed significantly higher than the normal range. However, Procalcitonin was within the normal range. Amylase levels are significantly elevated (1500.00 U/L), surpassing the upper limit of the normal range. These results suggested a potential inflammation and infection of the parotid glands, reflected in the hyperamylasemia.

Table 1: Laboratory results and cultures.

Component		Result	Reference Range	Comments
Complete Blood Count (CBC)	**white blood count (WBC)**	14.55	4.30 – 11.30 10*3/uL	HIGH
	Red blood cell (RBC)	4.69	4.30 – 5.50 10*6/µL	NORMAL
	Hemoglobin	11.8	11.0 – 15.0 g/dL	NORMAL
	Neutrophils Absolute	18.97	1.35 – 7.50 10*3/uL	HIGH
	Lymphocytes Absolute	2.80	1.90 – 4.90 10*3/uL	NORMAL
	Platelets	461	150 – 450 10*3/uL	HIGH
Renal Function panel and bone profile	**Calcium**	2.42	2.22 – 2.70 mmol/L	NORMAL
	Phosphorus	1.49	>= 0.36 mmol/L	NORMAL
	Urea	4.50	2.50 – 6.00 mmol/L	NORMAL
	Creatinine	40.00	27.00 – 54.00 umol/l	NORMAL
	Sodium	135.00	135.00 – 145.00 mmol/L	NORMAL
	Potassium	3.80	3.40 – 4.70 mmol/L	NORMAL
	Chloride	103.00	98.00 – 107.00 mmol/L	NORMAL
	Carbon Dioxide (CO2)	19.90	20.00 – 28.00 mmol/L	LOW
Inflammatory Markers	**erythrocyte sedimentation rate (ESR)**	57	0 – 30 mm/H	HIGH
	C-reactive protein (CRP)	13.0	<= 5.0 mg/l	HIGH
	Procalcitonin	0.04	0.29 – 1.40 ug/l	LOW
Salivary enzymes	**Amylase**	1500.00	25.00 – 101.00 U/L	HIGH
Cultures	**Blood culture**	No growth	[redacted]	[redacted]
	Urine Culture	No growth		
	Body Fluid Culture (Oral cavity left opening duct)	Scant Growth Serratia Marcescens		Susceptible to: -Cefepime -Ceftriaxone -Gentamicin -Piperacillin + Tazobactam -Trimethoprim + Sulfamethoxazole Resistant to: -Amoxicillin + Clavulanate -Ampicillin
Mumps Virus Antibodies	**Mumps IgG**	> 300.00	< 9.00 AU/ml	HIGH
	Mumps IgM	Negative	Negative	[redacted]

The patient started on 20 ml per kilogram of normal saline bolus over 20 minutes, followed by one and a half maintenance and ceftriaxone 75 mg per kilogram intravenous. Ultrasound of the bilateral parotid glands (FIGURE-2) revealed prominent bilateral cervical lymph nodes, particularly in the submandibular group, with normal morphology and no signs of pathological lymphadenopathy. The parotid glands were homogeneously enlarged, measuring 4.5 x 1.7 cm on the right and 4.7 x 1.9 cm on the left, with marked Doppler signals indicative of parotitis. No focal lesions or collections were observed on either side. However, this could be due to the earlier spontaneous drainage on both sides.

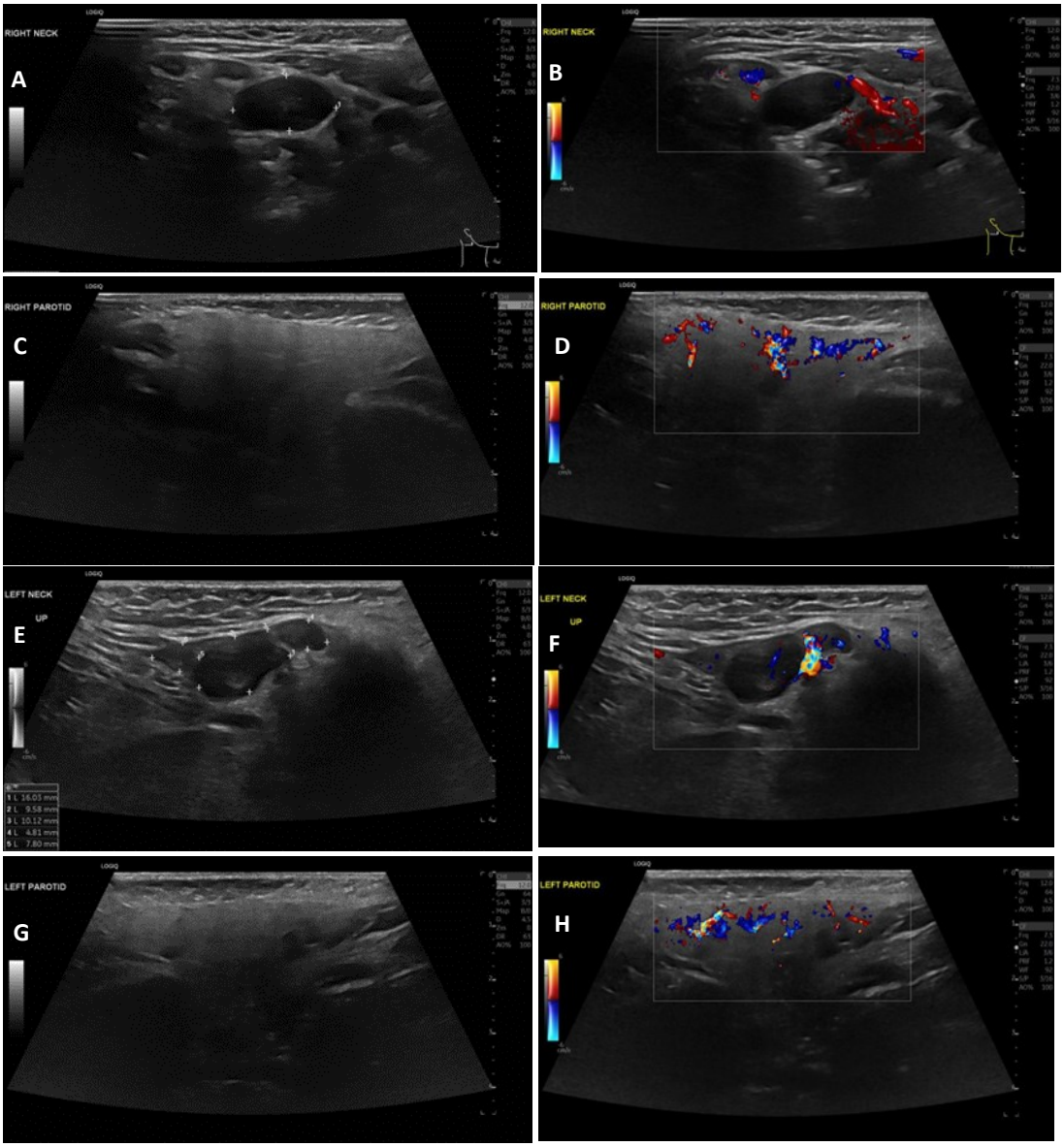

Figure-2: *Ultrasonography With Doppler In Bilateral Parotid Glands, Submandibular, and Cervical Area.* ***A, B:*** *Showing A Right Prominent Cervical Lymph Node, Especially in the Submandibular Group, with Unremarkable Morphology.* ***C, D:*** *Demonstrating A Prominent Homogeneous Parotid Gland Measure 4.5 X 1.7 Cm Demonstrating Prominent Doppler Signals Indicate Parotitis. No Focal Lesion Or Collection.* ***E, F:*** *Showing A Left Prominent Cervical Lymph Node, Especially In The Submandibular Group, With Unremarkable Morphology.* ***G, H:*** *Demonstrating A Prominent Homogeneous Parotid Gland Measure 4.7 X 1.9 Cm Demonstrating Prominent Doppler Signals Indicate Parotitis. No Focal Lesion or Collection.*

The diagnosis of bilateral bacterial suppurative parotitis was established based on the clinical presentation, laboratory data, and ultrasound findings. The patient was admitted under the care of general pediatrics for hydration and intravenous antibiotics. During her admission, on the second day, the culture from the oral cavity yielded scant growth of Serratia marcescens (TABLE-1). Thus, the patient was started on ceftriaxone 75 mg per kilogram intravenously every 12 hours with the consultation of the infectious disease team. Moreover, Mumps virus antibody results indicate that she is immunized. (TABLE-1).

On the fourth day of her admission, the patient showed improvement in subsiding the fever and decreasing the swelling bilaterally with good activity and oral intake. The infectious disease team was advised to continue on clindamycin 20 mg per kilogram every 8 hours for ten days orally upon discharge. The patient was discharged on oral antibiotic (clindamycin), given follow-up, seen ten days after discharge, and is doing well. The swelling bilaterally had subsided with a good outcome.

Discussion

The occurrence of Acute Suppurative Parotitis (ASP) in children is rare but concerning as it can progress to fatal PA (5). There have been very few reported cases of neonates, infants, and adults with PA (3,9,10). We present a case of an eight-year-old girl who developed bilateral bacterial PA. The typical symptoms of PA include painful swelling with redness and fluctuation. Pus drainage from Stenson's duct may also be observed, and pathogens can be detected in cultures (5). Other non-specific symptoms may include fever, irritability, and poor feeding. Laboratory tests may reveal increased acute phase reactants and predominance of neutrophils in the white blood cell count, as shown in our case. In our case, the patient developed bilateral PA associated with fever for one week, followed by flu symptoms, similarly reported in other cases in children and adults (3,9,10). In our case, the child presented with bilateral cervical lymphadenopathy but not preauricular lymphadenopathy, which is not typical of ASP (3). Rapid development of parotid inflammation from infection of the neck lymph nodes is rare(3). According to previous reports, the incidence of bilateral parotid inflammation is lower than that of unilateral cases (11,12). These factors made it challenging to diagnose parotid inflammation early in our case.

The cause of parotid inflammation is not fully understood. Still, it may result from the migration of pathogens from the oral cavity to the peri-parotid lymph nodes and then to the parotid gland through the parotid duct (13). Contaminated breast milk or formula could also be a source of infection for infants. Factors such as decreased salivary flow, poor oral hygiene, parotid duct abnormalities, and septicemia may contribute to children developing a parotid infection (14).

Our patient showed no abnormalities in the parotid duct and did not develop sepsis. However, decreased feeding, poor oral hygiene, and decreased salivary flow may have facilitated bacterial ascent to the parotid glands, leading to ASP. Also, the rapid development of bilateral parotid inflammation in our case is consistent with the rapid progression observed in a similar case of a 54-day-old54-day-old infant, which highlighted the need for vigilance in diagnosing and managing this condition (3).

Imaging such as US or CT is crucial for timely diagnosis and detecting abscess collection or inflammation in the parotid glands if there's no clinical improvement within 3-5 days or if facial nerve palsy occurs (7). A fluctuant swelling indicates inflammation, while a systemic inflammatory response may indicate sepsis (3). In our case, the US parotid gland was done, and prominent homogeneous parotid glands bilaterally showed, demonstrating evident Doppler signals indicating parotitis.

Treatment with fluid therapy and empirical antibiotic coverage for possible pathogens is crucial for ASP (3). The prognosis is generally reasonable. Surgical incision and drainage may sometimes be necessary to control the infection (3). Fortunately, our patient responded well to appropriate antibiotic treatment based on susceptibility testing with no complications.

Conclusion

In conclusion, we provide a unique case of bilateral PA in an 8-year-old female. PA is a rare condition that can occur unexpectedly in children. Pediatricians should be vigilant for the development of PA if children present with neck swelling, fever, and inadequate feeding in the ED. Prompt identification and timely administration of antibiotics and rehydration might potentially prevent the progression of ASP to PA. This exceptional case can potentially expand our understanding of PA in children.

Conflict of Interest

The authors declare they have no potential conflicts of interest to disclose.

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