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Review Article

Parotid abscess in children – A tertiary rural hospital experience

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ABSTRACT

Parotid abscess is a rare complication of acute parotitis in children. Acute parotitis occurs due to infection of intra-parotid or para-parotid lymph nodes or glandular parenchyma of the parotid gland which may progress to parotid abscess.

Objectives: To document the causative organism, clinical behaviour and response to treatment in paediatric parotid abscess.

Materials and methods: A retrospective study was done in our tertiary rural hospital from May 2007 to May 2015 to identify and analyse paediatric parotid abscess in 80 unilateral parotitis cases.

Results: 7 cases of parotid abscess were identified. 4 cases were diagnosed clinically and in 3 cases ultrasound was done showing heterogenous, hyperechoic, solid and cystic areas. In 2 patients, abscess was extending to the submandibular space. Incision and drainage was done in all patients. The most common bacteria was Methicillin Sensitive *Staphylococcus aureus*. *Escherichia coli* was reported in one patient, and was rare in parotid region. 2 patients had House Brackmann grade 2 marginal mandibular nerve palsy, and they recovered within 4½ months.

Conclusion: Parotid abscess is an uncommon but life-threatening condition in paediatric age group. Poor orodental hygiene was most important predisposing factor. Abscess can be diagnosed clinically and ultrasound scan is also an important diagnostic tool. It is commonly caused by Gram positive cocci and responds well to incision and drainage followed by appropriate antibiotics. No fistula may result if treated early.

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Contents

1. Introduction	000
2. Materials and methods	000
3. Results	000
4. Discussion	000
5. Conclusion	000
References	000

1. Introduction

Acute parotitis is common in children. It usually follows viral or bacterial fever. Juvenile recurrent parotitis is a rare, non-obstructive and non-suppurative condition in children due to reduced salivary flow, infection and autoimmune factors [1]. A few

of these patients progress to parotid abscess. In literature, there are a few small series of paediatric parotid abscess, and therefore, there are no definite guidelines to treat these patients. We performed a retrospective study to document the causative organism, clinical picture and to study their response to treatment.

2. Materials and methods

A retrospective study of paediatric parotid abscess was done in a tertiary rural hospital with a population coverage of around

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8 lakhs and an average of 5000 paediatric ENT cases per year. Institutional ethical committee clearance was taken before starting this study. We analysed the case records of 80 unilateral parotitis cases of which 72 cases were acute and 8 cases were recurrent parotitis admitted with painful swelling over parotid region and fever of acute onset from May 2007 to May 2015. Abscess associated with preauricular sinus and mumps was excluded. All the patients included in this study had the above symptoms for 3–5 days duration. 7 patients were found to have a unilateral, tender, progressive swelling with signs of inflammation, fluctuation and did not respond to antibiotics. 4 of these 7 patients were diagnosed as parotid abscess based on clinical findings of inflammation, fluctuation and scanty purulent discharge from Stenson's duct. 3 were diagnosed by ultrasound of parotid region which showed heterogenous, hyperechoic, solid and cystic areas. Incision and drainage was done in all patients. The skin incision was a vertical preauricular incision and abscess was opened in horizontal plane. The patients who had submandibular gland abscess also, a separate incision was given in neck for abscess drainage. The pus was sent for culture and sensitivity. All patients were subjected to twice daily povidone-iodine irrigations of abscess cavity and suitable intravenous antibiotic according to culture and sensitivity report was administered. As all the patients had poor orodental hygiene, dental opinion was taken. The causative organism, symptoms, signs and response to treatment were documented. Remaining 73 cases were treated conservatively with antibiotics and analgesics, and recurrent parotitis cases were investigated for an aetiology and treated accordingly (Figs. 1 and 2).

3. Results

7 patients were diagnosed as parotid abscess among which 6 were boys and 1 girl. All the 7 patients were of acute onset and no recurrent cases analysed had abscess. The age varied from 8 months to 15 years and all of them had a unilateral tender swelling over parotid region and fever of 3–5 days duration. 4 of

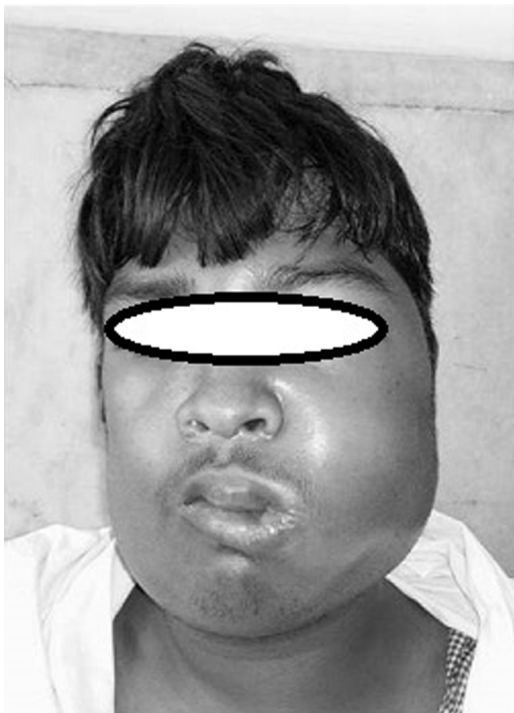


Fig. 1. Left side parotid abscess with diffuse oedema of face, eyelids and submandibular region in a 15-year-old boy.

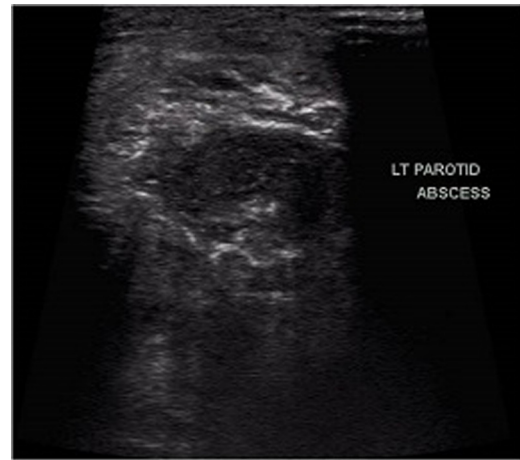


Fig. 2. Ultrasound of parotid region on left side showing ill defined heterogeneous collection with multiple thick septations suggestive of abscess and overlying parotid parenchyma appears oedematous.

these 7 patients had grade 3 trismus. The illness was rapidly progressive and not responding to antibiotics. 4 of these patients were diagnosed as parotid abscess based on clinical findings and 3 of them were diagnosed as parotid abscess based on ultrasound findings. None of the patients subjected to ultrasound had a calculus or stenosis of Stenson's duct. In 4 patients, the abscess was right sided and in 3 it was on the left. Tender cervical lymph nodes were found in intra-parotid, upper deep jugular and submandibular regions in 4 patients. 2 patients also had submental lymph nodes and 1 patient had tender middle deep jugular lymph node. In 2 patients, the abscess extended into submandibular region and one had gross oedema of face, eyelids and lips. Incision and drainage of abscess was done in all patients. As incision was kept open for drainage no drain or stent was placed. All the patients had poor orodental hygiene in which 2 patients had caries tooth. 2nd molar was extracted in one and 2nd premolar was extracted in other patient. Culture of the pus showed Methicillin Sensitive *Staphylococcus aureus* in 3 patients, Beta Haemolytic Streptococci Group F in 1 patient and *Escherichia coli* in 1 patient. In 2 patients, it yielded no growth. Following incision and drainage, all patients were treated by twice daily povidone-iodine irrigation of the abscess cavity and intravenous Amoxicillin–Clavulanic acid. 2 patients who did not respond to Amoxicillin–Clavulanic acid were treated with Clindamycin. All patients recovered and were discharged in 5–10 days. There was House Brackmann grade 2 palsy of marginal mandibular branch of facial nerve in 2 patients immediately after surgery which recovered in 3 months in one patient and 4½ months in other patient. After a mean follow-up of six months, all 7 patients were disease free without any recurrence of abscess. None had recurrent episodes of parotitis (Fig. 3).

4. Discussion

Acute suppurative parotitis is uncommon in children. It is usually ascending infection from oral cavity along the Stenson's duct following viral or bacterial fever, dehydration, or due to obstruction of Stenson's duct [2]. In some patients, it progresses to Parotid abscess, which is very painful and can be associated with necrosis of the parotid gland [3–5]. It can break through the parotid fascia and rapidly spread to other deep neck spaces or can spread as necrotising fasciitis or lead to septicaemia and can be life-threatening [6,7]. It is more common in immune-compromised children and patients with poor oral hygiene. In our series, however, none of the patients were immunocompromised, but



Fig. 3. Ultrasound scan parotid region on left side showing intra-parotid lymph nodes enlargement.

they all had poor oral hygiene and dental caries. In some studies like Saarinen et al. [4], all the parotid abscess cases had good oral hygiene. In 2 of our patients, the infection and suppuration had spread to deep neck spaces. In most of the patients, parotid abscess can be diagnosed clinically based on signs of inflammation over parotid region, fluctuation and purulent discharge from parotid duct [8]. However, in some patients, it may be difficult to differentiate from parotitis. Ultrasound scan of parotid region and magnetic resonance imaging are useful diagnostic aids in such patients [4]. These investigations can also pick up calculus or obstruction in parotid duct and subclinical lymph nodes, and according to Viselner et al. [9], ultrasound scan should be done in all cases of parotitis. In our series, 3 out of the 7 patients were diagnosed as parotid abscess based on ultrasound scan to confirm, document the extent and size of the abscess and to look for early spread to other deep neck spaces. It also ruled out a calculus in parotid duct. In literature, various lines of treatment have been used to treat parotid abscess like injectable antibiotics, ultrasound guided aspiration along with antibiotics, and incision and drainage [4,10]. All our patients were subjected to incision and drainage as the abscess was of significant size, had thick pus, abscess had not responded to antibiotics for 3 days, the risk of spread to other neck spaces and risk of septicaemia. Though few studies mentioned ultrasound guided aspiration of abscess as treatment modality, we preferred incision and drainage because our hospital is in a rural area and patient compliance is poor. There was also a risk of patient defaulting treatment if the aspiration fails to treat the abscess in single setting. Few studies have also documented better response to incision and drainage [2]. Various studies have shown that the most common causative organisms were Gram positive cocci like *Staphylococcus* and *Streptococcus* in very young children [8]. They have also documented Gram negative bacilli and *Mycobacterium tuberculosis* as the causative organism in some patients [11]. In our study also, the most common causative organism was Methicillin Sensitive *Staphylococcus aureus* – in 3 out of 7 patients. In one patient, the culture yielded Beta Haemolytic *Streptococcus* – Group F – and *E. coli* in one patient which was rare in parotid region. In 2 of our patients, the culture yielded no growth which could possibly be due to preoperative antibiotics. All our patients were treated with intravenous Amoxicillin/Clavulanic acid along with Metronidazole. Various studies in literature have advocated Amoxicillin/Clavulanic acid for treatment of parotid abscess [11]. 5 of our

7 patients showed a good response to the above antibiotics along with regular povidone-iodine irrigation of the abscess cavity and recovered within 7–10 days. The 2 patients who did not respond well to Amoxicillin/Clavulanic acid, recovered with Clindamycin and Gentamicin. A few complications have been documented in literature after drainage of parotid abscess like facial nerve injury, spontaneous rupture into external auditory canal and preauricular skin, salivary fistula and very rarely temporal lobe abscess [6,12–15]. Only 2 of our patients had immediate postsurgery House Brackmann grade 2 palsy of marginal mandibular branch of facial nerve which recovered in about 3 months in one and 4½ months in other patient. These were the 2 patients in whom upper deep neck space like submandibular space was involved. None of the patients had a fistula or recurrence of abscess.

5. Conclusion

Parotid abscess is an uncommon but life-threatening condition in paediatric age group. Poor orodental hygiene was the most important predisposing factor. Abscess can be diagnosed clinically and ultrasound scan is also an important diagnostic tool. It is commonly caused by Gram positive cocci and responds well to incision and drainage followed by appropriate antibiotics. No fistula may result if treated early.

Funding

None.

Conflicts of interest

None declared.

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