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Research Article

Facial Nerve Paralysis After Dental Extraction

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Abstract

Parotitis is inflammation of the parotid gland caused by infection, either virus or bacteria. Facial nerve palsy with an associated parotid mass should always be investigated for underlying neoplasm. Facial nerve palsy is an unusual symptom of inflammation of the parotid gland. We report two cases of unilateral facial paralysis associated with acute parotitis. The patients experience ipsilateral facial paralysis, accompanied by additional symptoms that varied between cases. Infective causes of facial nerve palsy usually have good prognosis.

Keywords: Parotid gland, Facial nerve, Facial paralysis; Parotitis, Neoplasm

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INTRODUCTION

Facial paralysis due to parotid pathology is almost always associated with malignant lesion of the gland. Although there has been reported facial nerve palsy secondary to benign parotid gland pathology such as benign tumours, sarcoidosis and parotid cysts, the incidence of facial nerve palsy secondary to infective pathology of the parotid gland is exceedingly rare^{1,2}.

CASE SUMMARY

Case 1

A 36-year-old gentleman presented with one-week history of right parotid swelling and pain. He also complained of right sided facial nerve palsy for 5 days. He had history of dental procedure done 2 weeks prior to his symptoms. No preceding upper respiratory tract symptoms. He has no odynophagia, dysphagia or respiratory compromise. There was no fever.

Clinical examination revealed diffuse swelling over right parotid which was erythematous and tender. There was no trismus. Intraoral examination was unremarkable. No pus on milking of Stenson duct. No medialization of lateral pharyngeal wall. No neck nodes were palpable. There was presence of right-sided facial nerve palsy, with House-Brackmann grade III. Other cranial nerves were intact. Otoscopy examination were unremarkable. Pure tone audiometry showed normal hearing bilaterally. Topodiagnostic test revealed absent ipsilateral stapedial reflex, normal Schimer test bilaterally. Flexible endoscopic examination was unremarkable.

A clinical diagnosis of acute right parotitis was made. He was treated with intravenous Co-Amoxiclav, oral Methylcobalamin, tablet Prednisolone, artificial eye drops and advised on eye care. Right-sided facial swelling and pain resolved in response to antibiotic. He was discharged after 3 days of hospitalization and completed total 10 days of antibiotics and tapering dose of prednisolone. Follow-up outpatient visit at one month showed improvement of right sided facial nerve palsy House-Brackmann grade II and resolved right parotid swelling. Facial nerve palsy resolved completely at subsequent follow-up 6 months post initial presentation.



Figure 1. Right facial nerve palsy at initial presentation.

Case 2

A 58-year old gentleman with underlying Diabetes Mellitus presented with two-day history of right parotid swelling, restricted mouth opening and reduced oral intake. He had a dental procedure done about a week prior to initial presentation. He denied odynophagia, dysphagia or airway symptoms. There was no history of preceding upper respiratory tract infection or fever.

Initial clinical assessment showed diffuse, tender swelling over right parotid region. Overlying skin is warm and erythematous. He also had trismus with mouth opening of one finger-breadth. Intra-oral examination revealed bulging of the right peritonsillar region. No neck nodes palpable. Further flexible nasopharyngo-laryngoscopy examination showed right peritonsillar bulge with slight extension of the right lateral pharyngeal wall. Cranial nerves were intact on initial assessment. Otoscopy examination was unremarkable. Contrast-enhanced computed tomography of the neck revealed small collection inferior to right alveolar process of right maxillary bone, swollen right masseter and right parotid glands. Diagnosis of acute peritonsillar abscess with acute parotitis was made.

Incision and drainage was done over right peritonsillar region, which drained 10cc of pus. Pus culture and sensitivity showed mixed growth of 1 gram positive cocci and 2 gram negative rods. He was treated with intravenous Cefuroxime and Metronidazole. On Day 6 of admission, patient developed right-sided facial nerve palsy, House-Brackmann grade III. Other cranial nerves were intact.

Fine needle aspiration cytology done over right parotid swelling showed benign salivary acini, no malignant cell seen. Right sided facial swelling and pain resolved with antibiotics, with improved mouth opening and good oral intake. He completed 2 weeks of intravenous antibiotics. He was referred for facial exercises. On his follow-up outpatient visit at one month, right parotid swelling resolved, with persistent right facial nerve paralysis House-Brackmann grade II.

DISCUSSION

Inflammation of salivary gland such as parotitis is usually caused by salivary stasis. Predisposing factors include sialolithiasis, duct stricture, dehydration, poor oral hygiene, immunosuppression, diabetes mellitus, autoimmune disorders and congenital sialiectasis³. In both patients, there was a history of dental procedure prior to presentation, suggesting dental origin of infection. Poor oral hygiene was predisposing factors in both patients. Index patient in the second case had underlying diabetes mellitus.

Acute suppurative sialadenitis commonly involved the parotid glands as the serous property of the saliva has less antimicrobial activity, as compared to the mucinous saliva of the submandibular gland. Common organisms that are responsible for sialadenitis include *Staphylococcus aureus* followed by *Streptococcus viridans*, and anaerobes⁴. In the second case, pus culture showed mixed growth of a gram-positive cocci and 2 gram negative rods.

Majority of the patient presented with acute onset of local pain and swelling, erythema, trismus, usually accompanied by fever, malaise and poor oral intake. Clinical examination will reveal tenderness, warmth and induration of the overlying skin. In parotid abscess, fluctuancy may not be elicited due to the overlying capsule formed by the fascia superficial to it¹. Bimanual palpation occasionally demonstrates pus from Stenson duct opening⁴.

In the first case, the patient came with typical presentation of right acute parotitis with involvement of facial nerve, which

was unusual. Both parotid swelling and facial paralysis responded well to antibiotics. The second patient presented with acute right peritonsillar abscess with inflammation of ipsilateral parotid gland. Facial paralysis developed later at Day 6 of admission. Fine needle aspiration was thus essential to exclude possibility of parotid neoplasm, in which cytology revealed benign salivary acini. Computed tomography did not show parotid neoplasm.

Facial nerve palsy secondary to parotitis is extremely rare. In cases where facial nerve palsy is associated with parotid pathology, malignant neoplasm of the gland has to be highly suspicious especially high grade mucoepidermoid carcinoma and adenoid cystic carcinoma of parotid because of perineural invasion⁴. Other than that, benign conditions of the parotid gland such as Warthin tumour, and sarcoidosis has also been shown to affect the facial nerve³. The etiology of facial nerve paralysis in acute parotitis remains unknown. Involvement of the facial nerve has been suggested to be secondary to compression of the seventh nerve in association with local inflammation; perineuritis due to the virulence of the offending organisms or ischemic neuropathy arising from the local toxic effects of infection^{1,2,5}.

Clinical approach should begin with a full history and clinical examination. Detailed examination of the head and neck and cranial nerves should be done to exclude any malignancy. Acute signs of infection such as redness, tenderness and warmth with documented fever should be treated with intravenous antibiotics. If there is a purulent discharge, swab for culture and sensitivity has to be taken to determine the offending organism and its antibiotic sensitivity. For our second patient, pus culture grew mixed growth of 1 gram positive and 2 gram negative rods. Other adjuvant measures include sialogogues, hydration and good oral hygiene are advocated³.

When diagnostic doubt exists, patients should be investigated for an underlying neoplasm. Imaging is indicated in patients who do not respond to medical therapy or if there is suspicion of underlying malignancy⁴. Ultrasound scan is the initial imaging modality of choice for the assessment of parotid gland, as it is able identify any collection, mass or calculi; and will be able to detect features of malignant lesion such as irregular shape, speculated or ill-defined margin, heterogeneous echotexture, punctate calcification and vascularization⁶. Further imaging modalities such as CT (computed tomography) or MRI (magnetic resonance imaging) will be needed if there is further suspicion of malignancy to see the extension of tumour, any nodal metastasis and for staging purpose. Further evaluation of a parotid mass can be done by means of fine needle aspiration, biopsy or histological evaluation of the mass by surgical excision⁴.

In our cases, the patient responded to initial medical treatment and the parotid swelling resolved rapidly. The first patient showed complete resolution of facial paralysis. As for the second patient, further follow-up visit at one month showed persistent facial nerve paralysis despite resolution of his right parotid swelling.

CONCLUSION

Facial nerve palsy accompanying benign parotid pathology is uncommon. Acute parotitis causing facial nerve palsy is even rare. In cases of facial nerve palsy associated with parotid swelling, malignancy has to be excluded. Infective causes of facial nerve palsy have a good prognosis, with likely resolution of the facial nerve palsy.

Conflict of interest: There is no conflict of interest in this work.

Patient's consent: Verbal consent was obtained from patient in agreement of data publication.

What is new in this case report compared to previous literature?

- Parotitis/ infective pathology is an unusual cause of facial nerve palsy.
- We highlighted the possibility of dental origin of infection progressing to involve parotid and other neck spaces.

Learning points and implications to patients

- Full examination of the head and neck and relevant investigations must be undertaken to rule out the possibility of malignancy.
- Management of patient should be focused on treating the underlying cause to reduce perineural inflammation.

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