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LETTER / *ENT*

Pneumoparotid, a rare diagnosis to consider when faced with unexplained parotid swelling

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Many aetiologies can cause parotid swelling: an infection, lithiasis, an autoimmune reaction, a tumour, etc. Another extremely rare cause can be pneumoparotid, induced by air being insufflated from oral cavity into the intraparotid salivary ducts, predisposing to recurrent parotid infection. This case illustrates the role of imaging in diagnosis and infectious complications of pneumoparotid, and above all highlights the usefulness of a no contrast parotid CT scan in the positive diagnosis of this condition.

Clinical case

This 44-year-old female patient had had left sub-auricular pain for two weeks. Clinical examination found swelling, left sub-mandibular angle pain and slight fever. Parotid ultrasound showed a heterogeneous, hypo-echoic, focal appearance of the superior pole of the left parotid gland; with Doppler colour this was seen to be hypervascularised. The left parotid salivary ducts were thin with no associated lithiasis.

In axial T2 inversion recovery (Fig. 1a) in parotid MRI, there was a hypersignal area in the deep portion and in the posterior superior part of the superficial portion of the left parotid gland, which was enhanced in T1 fat sat following injection of gadolinium (Fig. 1b). A no contrast parotid CT (Fig. 2) was performed and found no lithiasis. It did however show the presence of air within the left parotid duct and in the left parotid parenchyma. These observations pointed to diagnosis of left pneumoparotid, the origin of uncomplicated left acute discrete focal parotitis. The outcome was simple following suitable antibiotic treatment.

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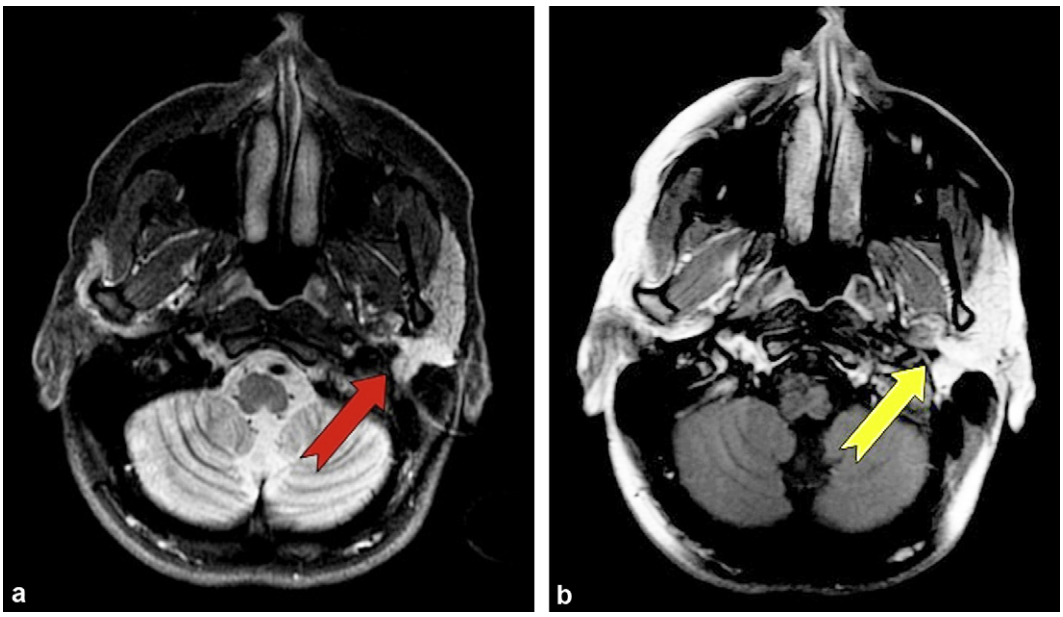

Figure 1. Parotid MRI: a: T2-weighted axial inversion recovery: area of hypersignal in the deep portion and the posterior superior part of the superficial portion of the left parotid gland (red arrow); b: T1-weighted axial slice after fat saturation and gadolinium injection: discrete heterogeneous enhancement of the region in T1 hypersignal (yellow arrow).

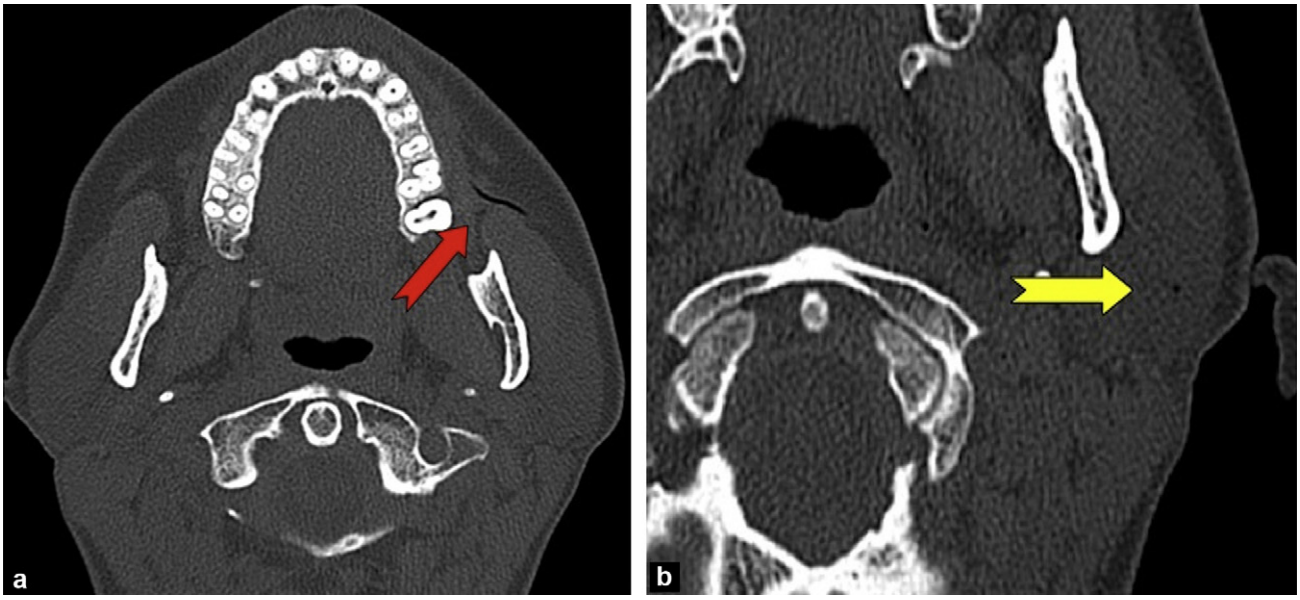

Figure 2. No contrast parotid CT in bone window: a: axial slice centred on the left parotid gland: presence of air in the left parotid duct (red arrow); b: axial slice centred on the left parotid gland: intraparenchymatous air bubble in the left parotid gland (yellow arrow).

Discussion

Pneumoparotid is defined as the presence of air in the salivary ducts and acini of the parotid gland. Intrabuccal pressure can sometimes rise, leading to the insufflation of air into the parotid duct: this may be due to dental instrumentation, prolonged bouts of coughing, repeated nose-blowing, functional pulmonary exploration, playing wind instruments, or manoeuvres to open the Eustachian tube. Pneumoparotid physiopathology is related to the increase in intrabuccal pressure overcoming the normal sealing mechanisms of the meatus of the parotid duct [1,2]. There need indeed to be anatomical meatal or duct abnormalities combined with this pressure increase, to create the reflux of air. The patient often has a swollen parotid and pain. Sometimes, parotid acinar perforation can occur and cause intraparietal air in the para- and retropharyngeal spaces, or even pneumomediastinum and/or distant pneumothorax [3,4]. Recurrent episodes of pneumoparotid may cause acute or chronic secondary bacterial infections. Multislice computed tomography is still the standard examination method for diagnosing pneumoparotid [5,6]. It can show specific local diffusion of air in the parotid duct, the parotid salivary ducts and the acinar system and can detect distant

diffusion of air in the para-pharyngeal, carotid and mediastinal spaces, if parotid acinar rupture has occurred. It can eliminate lithiasis as a cause for the clinical picture but is less efficient in positively diagnosing complications. Ultrasonography identifies air bubbles as associated, intraductal, mobile, comet-tail artefacts. It can also help detect acute parotitis with hypo-echoic, homogeneous areas, hypervascularised in Doppler colour. Like CT, it can help eliminate a lithiasic aetiology where there is pain and/or infection.

MRI basically helps in assessing pneumoparotid complications. In acute parotitis it can reveal individual parotid areas in T2 hypersignal or T1 hyposignal, which enhance uniformly after injection of gadolinium. Sialo-MRI detects duct dilatations in chronic parotitis. MRI can sometimes show up individual intraductal air bubbles as rounded images in T1 and T2 hyposignal. Sialography [7] essentially allows chronic parotitis complications to be visualised, specifically showing duct dilatations starting in the parotid duct, extending gradually to the secondary ducts.

Conclusion

Pneumoparotid is a rare cause of parotid gland swelling and pain that is often not diagnosed and thus not treated. It is essential to diagnosis this condition, as chronic insufflation of intraparotid air is a source of mechanical and infectious complications. No contrast multislice computed tomography is the reference method for positively diagnosing this condition. MRI and ultrasound can guide positive diagnosis, but above all they help in detecting possible inflammatory or infectious complications.

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