

Venous Ectasia Mimicking Intraparotid Mass: MRI Findings

Nusabe Kaya^{1*}, Muhammed Pamukcu² and Berrin Erok³

¹Department of Radiology, Medical School of Kemerburgaz University, Medical Park Hospital Bahcelievler, Istanbul, Turkey.

²Department of Otorhinolaryngology, Medical School of Kemerburgaz University, Medical Park Hospital Bahcelievler, Istanbul, Turkey.

³Gaziosmanpasa Taksim Education and Training Hospital.

*Corresponding author

Nusabe Kaya, Assistant of Professor Department of Radiology, Medical School of Kemerburgaz University, Medical Park Hospital Bahcelievler, Kultur Street No1, Bahcelievler, Istanbul, Turkey 34180, Tel: 00 994 755 45 67; Fax: 0 212 848 10 65; E-mail: nusabedr@hotmail.com, nusabe.kaya@medicalpark.com.tr.

Submitted: 13 Sep 2017; **Accepted:** 20 Sep 2017; **Published:** 03 Oct 2017

Abstract

Background: Venous ectasias of the parotid region are rarely lesions that mimic mass of the parotid gland. The detection of venous ectasia has significantly increased with the increased use of cross-sectional imaging in the last two decades, especially in asymptomatic patient who scanned for other reasons. We report MRI findings and appropriate radiological investigation of case with venous ectasia in the parotid gland imitated intraparotid mass.

Case Report: A 58-year old woman underwent cranial MRI due to the history of headache. Incidentally, was detected well-defined nodular lesion with regular contours in the parotid gland, hypointense on T1-weighted scan and homogeneous hyperintense on T2-weighted scan similar with solid mass. Lesion completely and strongly enhanced after contrast administration. Axial T2-weighted images demonstrates incomplect phase-encoding artefact in the lesion indicating flow. The gray scale and Doppler ultrasonography rule out solid mass and confirm diagnosis of venouse ectasia. Therefore, fine needle aspiration was not performed. Since the absence seriously discomfort of patient advanced invasive procedure as venography or surgery treatment were not done.

Conclusion: To know MRI findings of intraparotid venous ectasia important for accurately diagnosis and differential diagnosis of intraparotid masses and can prevent unnecessary invasive procedures. Gray scale and Doppler US combined with clinical examination are sufficient for correct diagnosis.

Keywords: Parotid gland, venous ectasia, retromandibular vein, phase-encoding artefact, MRI.

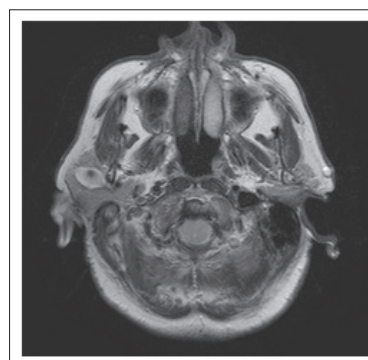
Introduction

Venous ectasia of the parotid region is a rare lesion that mimic masses of the parotid gland. However, the detection of venous ectasia has significantly increased with the increased use of cross-sectional imaging in the last two decades, especially in asymptomatic patients who scanned for other reasons. There are few studies which report magnetic resonans imaging (MRI) findings of intraparotid venous ectasia. The appearance of these ectatic veins resemble a mass lesion in the parotid gland. The knowledge of MRI findings is important for accurate diagnosis and differential diagnosis of intraparotid masses and can prevent unnecessary invasive diagnostic procedures and surgery. This report presents and discusses MRI findings and appropriate radiological investigation of a case with venous ectasia imitating intraparotid mass lesion.

Case report

A 58-year old woman underwent cranial MRI with intravenous contrast injection due to the history of long lasting headache. Axial T1-weighted, axial and sagittal T2-weighted, axial and coronal fat-saturated T1-weighted contrast enhanced sequences were obtained. On MRI a

well-defined nodular lesion with regular contours in the parotid gland was seen incidentally. The lesion was homogeneously hyperintense on T2-weighted scan (**Figure 1a**) and hypointense on T1-weighted scan (**Figure 1b**). Post-contrast study demonstrated strong enhancement throughout the lesion (**Figure 1c,d**). T2-weighted transverse images showed focal signal void resembling calcification in the mass. Actually this finding was phase-encoding artefact, indicating a flow within the lesion. No lymph node enlargement was observed.



a

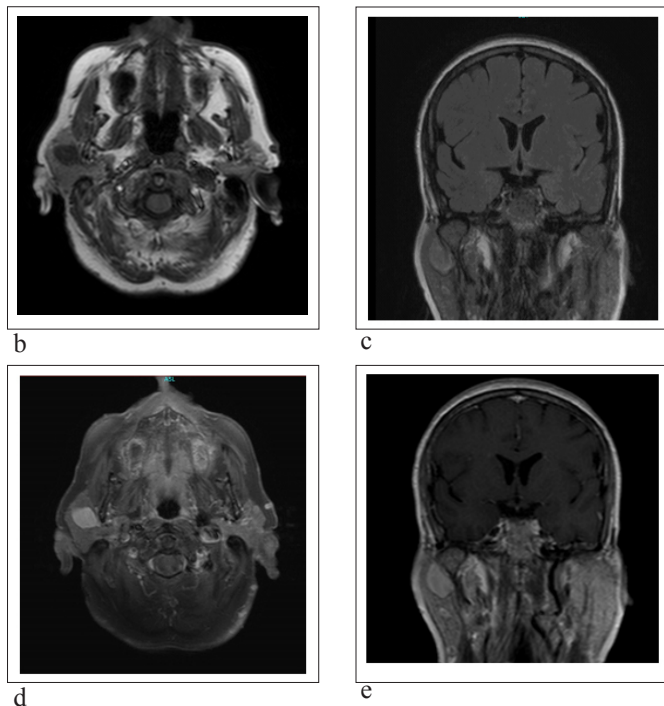


Figure 1. T2-weighted axial MRI (a) shows a hyperintense well-defined nodular lesion in the parotid gland. Phase-encoding artefact (arrow) indicating flow within the lesion. Lesion is hypointense on fat-saturated T1-weighted scan (b) and shows strongly enhancement on postcontrast axial and coronal images (c and d).

When the patient was questioned there was history of a painless mass with long duration showing change in size with eating, swallowing and head position in the parotid area. There was no history of trauma, previous surgery or infection of the parotid gland. Physical examination revealed compressible, nonpulsatile, painless, soft mass in the right parotid area. The mass did not have a palpable bruit or thrill. No abnormalities were detected in the examination of the ear, nose and throat. There was no palpable lymphadenopathy in the neck. The biochemical examination revealed no pathological finding.

Ultrasonography (US) scan was performed for accurate diagnosis and 13x22 mm sized, homogeneous, anechoic intraparotid cystic lesion with thin wall, without solid component was demonstrated (**Figure 2a**). The size and echogenicity of the remaining parotid gland was normal. No pathologic lymphadenomegaly was observed. Since the lesion was totally compressed with transducer during US examination, it was not visible (**Figure 2b**). The mass changed size with the position of the head or valsalva manoeuvre. Color flow doppler US scan showed color filling in lumen of the cystic mass after pulsatile prob compression. Spectral analysis did not demonstrate spectral waveform because there was low velocity flow in the dilated vein lumen. Fine needle aspiration cytology was not performed. Because of absence of the serious discomfort of the patient advanced invasive procedures as venography or surgical treatment were not performed. During 2-year clinical follow-up no change of size of dilated vein was recorded.

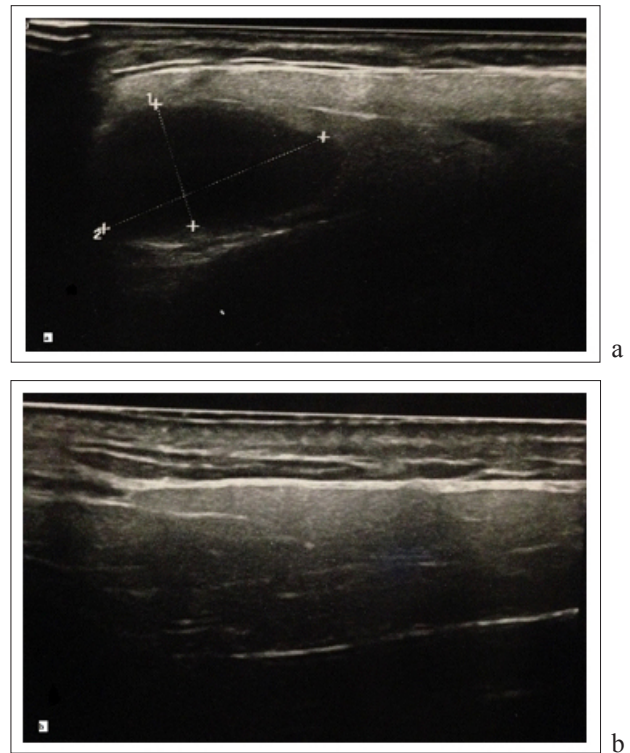


Figure 2. US demonstrate anechoic thin wall cystic lesion without solid component (a). Lesion totally be compressed with transducer and no visible (b).

Discussion

Venous ectasias of the parotid region are extremely rare lesions that usually appear in women. Intraparotid venous ectasia is dilation of retromandibular vein that develop without thrombosis or any obstruction of proximal veins. They are usually asymptomatic or present with nonpalpable but visible mass in the parotid area. Dempsey et al. described a specific clinical sign, the “turkey wattle sign” which is the fluctuation in the size of the mass with bending the head downward [1].

Retromandibular vein is formed by the joining of superficial, middle temporal and maxillary veins and continue as the tributary of the external jugular vein (**Figure 3**) [2]. It connect to internal jugular vein via a communicating vein in the infraparotid area. There are the most commonly encountered variations that the retromandibular vein crossed the parotid gland [3]. Classification System of The International Society for the Study of Vascular Anomalies (ISSVA) divides vascular anomalies into two primary biological categories: vascular neoplasms and vascular malformations [4]. Vascular malformations include low-flow malformations (capillary, venouse, and lymphatic), high-flow malformations (arterial malformation, arteriovenous malformation, arteriovenous fistula), and combined malformations (i.e., venolymphatic malformation) [4]. According to ISSVA classification venous ectasia is a low-flow vascular malformation, thus it has structural abnormalities and doesn't have endothelial cell turnover. The differential diagnosis of venous anomalies of the parotid gland includes varices, haemangiomas, venous aneurysms, venous ectasia and venous malformations [5].

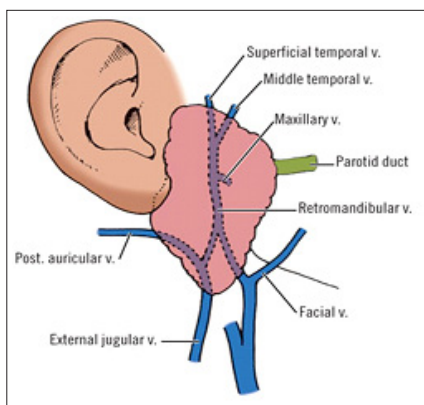


Figure 3. Anatomic illustration of intraparotid trace of retromandibular vein.

All of the cases were reported in the literature include clinically appearance, differential diagnosis, surgical investigation and subsequent management. Imaging modalities used in previous cases was US, computer tomography and venography [7-6]. To the best of our knowledge, there are only two cases previously with reported MRI findings of venous ectasia [5-8]. Wali et al. reported the first incidental case with MRI findings [5]. A high signal on T2-weighted, low signal on T1-weighted images, well-defined border and location in the superficial lobe are the main MRI findings for an intraparotid benign mass. MRI findings of venous ectasia is same. Internal structure may be homogeneous or heterogeneous as benign mass. Both the mass and venous ectasia shows strong enhancement after contrast administration. Only phase-encoding artefact is characteristic for venous ectasia, but it is not always seen, because of the low flow velocity in the dilated vein. Phase-encoded motion artefact is one of the many MRI artefacts and occurs as a result of movement of the fluid during the scan and suggests vascular anomalies. Wali et al. did not report the phase-encoding artefact in their case. In our patient on axial T2-weighted images there was focal signal void point in the mass, which we reported as phase-encoding artefact. In recent years dynamic contrast-enhancement and diffusion-weighted MRI sequences use entered in standard protocol of evaluating of parotid gland. Previous studies has claimed that these protocols did not help in the diagnosis of a parotid mass, but recent studies claim the contrary [9,10]. Dynamic contrast-enhancement sequence contributes to diagnosis of venous ectasia. Venography is an invasive procedure and is not used today. MR venography is ineffective, because of the low flow velocity in the dilated vein. In case of intraparotid venous ectasia needle aspiration was performed in some studies, but was non-contributive in all cases. Therapy is performed only for cosmetic reasons, because there are usually no symptoms. Ligation surgery and partial parotidectomy were performed in previous studies and no symptoms or recurrence was reported after surgery [6-7].

Conclusion

MRI findings of intraparotid venous ectasia are similar to other benign masses of parotid area. Phase-encoding artefact suggest vascular anomalies, but it is not always seen. The knowledge of MRI findings is important for accurate diagnosis and differential diagnosis of intraparotid masses and can prevent unnecessary invasive procedures. Dynamic contrast-enhancement sequence contributes to diagnosis of venous ectasia, but gray scale and Doppler US combined with clinical examination are sufficient for correct diagnosis.

References

1. Dempsey EF, Murley RS (1970) Vascular malformations simulating salivary disease. *Br J Plast Surg* 23: 77-84.
2. Skandalakis JE, Carlson GW, Colborn GL, Mirilas PS, Skandalakis LJ *Surgical Anatomy Chapter 1. Neck* 23.
3. Kopuz C, Ilgi S, Yavuz S, Onderoglu S (1995) Morphology of the retromandibular vein in relation to the facial nerve in the parotid gland. *Acta Anat (Basel)* 152: 66-68.
4. Lowe LH, Marchant TC, Rivard DC, Scherbel AJ (2012) Vascular malformations: classification and terminology the radiologist needs to know. *Semin Roentgenol* 47: 106-117.
5. Wali GN, Mawby TA, Sheerin F, Milford CA (2013) Varix of the retromandibular vein within the parotid gland: case study. *J Laryngol Otol* 127: 825-827.
6. Manni JJ, Merx JL, Van Den Broek P, Thijssen HO (1988) A symptomatic venous anomaly of the parotid gland: case report and review of the literature. *J Laryngol Otol* 102: 565-567.
7. Schulman NH, Carothers A, Gould WJ (1981) Parotid venous ectasia. *Am J Otolaryngol* 2: 59-61.
8. Saeed WR, Kolhe PS, Smith FW, Murray GI (1997) The 'turkey wattle' sign revisited: diagnosing parotid vascular malformations in the adult. *Br J Plast Surg* 50: 43-46.
9. Christea A, Waldherr C, Hallett R, Zbaeren P, Thoeny H (2011) MR imaging of parotid tumors: typical lesion characteristics in MR imaging improve discrimination between benign and malignant disease. *Am J Neuroradiol* 32: 1202-1207.
10. Serifoglu I, Oz II, Damar M, Tokgoz O, Yazgan O, et al. (2015) Diffusion-weighted imaging in the head and neck region: usefulness of apparent diffusion coefficient values for characterization of lesions *Diagn Interv Radiol* 21: 208-214.

Copyright: ©2017 Nusabe Kaya, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.