## A rare case report of internal jugular vein aneurysm

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Abstract Vascular aneurysms are common in the arteries and rare in the veins. Internal jugular vein (IJV) aneurysm is a relatively rare condition. The patient presented with a painless swelling on the right side of the neck that appears while coughing, straining, and bending. Detection of a soft and compressible swelling in the course of IJV, superficial to the sternocleidomastoid muscle, which resolves on compression and becomes prominent on Valsalva maneuver supports the clinical diagnosis of IJV aneurysm. Imaging diagnosis was done by color Doppler ultrasound, and precise delineation of the lesion was done with multidetector computed tomography. There was no thrombus within aneurysm.

Keywords: Cystic neck lesion, multidetector computed tomography, ultrasound

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### **INTRODUCTION**

Venous aneurysms in the neck are not common morphological and clinical entity and should be included in the differential diagnoses of neck masses in proper clinical presentation.<sup>[1]</sup> These aneurysms are clinically significant due to possible risk of internal thrombosis and subsequent pulmonary embolism. They should be differentiated from other cystic lesions of the neck such as branchial cleft cyst, lymphangioma, dermoid and epidermoid, thymic cyst, and cervical bronchogenic cysts.

#### CASE REPORT

A 35-year-old female presented with complaints of painless swelling on the right side of the neck for 2–3 weeks [Figure 1]. The swelling becomes more prominent on coughing, straining, bending, and breath holding and decreased in size on resuming normal breathing [Figure 2]. There was no prior history of trauma or chronic illness.

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On clinical examination, approximately  $4 \text{ cm} \times 3 \text{ cm}$  diffuse swelling was noted in the right supraclavicular area lateral to clavicular head of sternocleidomastoid [Figure 2].

On ultrasound, a well-defined, thin-walled, cystic structure measuring 3 cm  $\times$  1.3 cm  $\times$  2.5 cm with mobile swirling echoes within it was seen arising from the lower distal portion of the right internal jugular vein (IJV) just above the medial end of the clavicle [Figure 3]. The rest of the IJV was compressible with no evidence of internal thrombus. On color Doppler, lesion exhibited slow internal flow [Figure 4], and spectral Doppler analysis showed venous waveform [Figure 5]. The findings were suggestive of IJV aneurysm with no evidence of internal thrombus. Left IJV was normal.

Multidetector computed tomography (MDCT) angiography was done on 16-slice computed tomography (CT) machine for confirmation.

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Protocol for examination, following plain scan and premonitoring scan is done with trigger set at the left ventricle for HU 90–100. After intravenous administration of 100 mL nonionic iodinated contrast at rate of 4 ml/s, arterial and venous scans resumed at 3 s and 8 s delay, respectively. The scan is carried out in caudocranial direction. CT angiography confirmed the presence of a well-defined enhancing oval-shaped saccular lesion at the anterior wall of the right IJV with short neck [Figures 6 and 7]. Left IJV was normal.



Figure 1: Swelling over the right side of the neck anterior to the sternocleidomastoid muscle

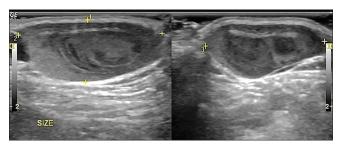


Figure 3: Well-defined, thin-walled, cystic structure with mobile swirling echoes within it arising from the internal jugular vein

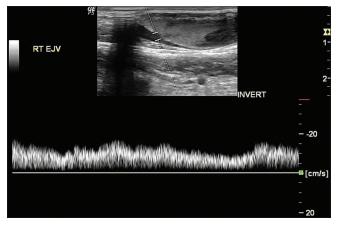


Figure 5: Spectral Doppler analysis showed venous waveform

The patient underwent surgery, in which aneurysm was excised through the neck, artificial graft patch was placed at the neck, and venorrhaphy was done to prevent further recurrence and leak.



Figure 2: Swelling more prominent on breath holding and straining

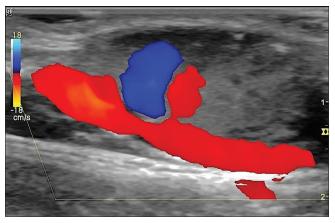


Figure 4: Color Doppler exhibited slow internal flow with Ying-Yang sign



Figure 6: Multiplanar multidetector computed tomography angiography plain images demonstrated a saccular aneurysmatic dilatation at the proximal part of the right internal jugular vein



Figure 7: Multiplanar multidetector computed tomography angiography contrast images demonstrated a saccular aneurysmatic dilatation at the proximal part of the right internal jugular vein

Postoperative ultrasound was done, which showed no leak from the site of the graft and no recurrence was seen.

Pathological report suggested excised specimen was a true aneurysm.

#### DISCUSSION

Venous aneurysm is uncommon; the term describes an isolated saccular or fusiform dilatation of a vein.<sup>[2]</sup> Other terms such as phlebectasia, venous cyst, aneurysmal varix, and venectasia are interchangeably used in the literature.<sup>[3]</sup> It should be distinguished from a pseudoaneurysm resulting from trauma or infection. Venous aneurysms are more common on the right side of the neck and rarely present bilaterally.<sup>[4]</sup> They are classified into primary (congenital) and acquired lesions; the former seem to be true aneurysms because of the intact venous wall.<sup>[5]</sup> Venous aneurysms, seen in the neck and chest, are mostly congenital.<sup>[6]</sup> The causes of venous aneurysms remain unknown. Some reports suggest that venous aneurysms are developmental, perhaps, secondary to weakness of elastic fibers in the vessel wall.<sup>[7]</sup> Thinning, in the elastic and muscular layers in the venous aneurysm, has been observed during pathologic investigation. There are few case reports of pediatric age group jugular vein aneurysms which depicted congenital venous malformation.<sup>[8]</sup> However, there are very few cases of venous malformation that remained silent until later in life when they expanded as a result of trauma, sepsis, and hormonal changes. Matsuura et al.<sup>[9]</sup> revealed that the thinning in the elastic layer is the most significant cause regarding congenital fragility. Acquired aneurysms in the venous

system develop with changes in the blood pressure and flow of blood. Clinically, neck aneurysms show an increase in size on the Valsalva maneuver. Jugular venous aneurysms should be included in the differential diagnosis of any neck soft-tissue mass where it can be easily confused with cavernous hemangioma, cystic hygroma, laryngocele, lymphocele, enterogenous cyst, lymphadenopathy, thyroid swelling, thyroglossal cyst, dermoid cyst, and branchial cleft cyst.<sup>[5]</sup> Venous aneurysms can lead to complications such as thrombus formation, pulmonary embolism, spontaneous rupture, and thrombophlebitis.<sup>[10]</sup> Due to the low incidence of IJV aneurysm, treatment guidelines are not clearly established. IJV aneurysm remains asymptomatic in the majority of cases, and mural thrombosis is infrequently encountered; conservative treatment is recommended. Majority of reports indicated that surgical treatment was required for symptomatic IJV aneurysms and cosmetic reasons.

#### CONCLUSION

Venous aneurysms of the neck are a rare entity. Ultrasound is the first choice of investigation followed by MDCT angiography which has a wide range of applications and enables both surgeon and radiologist to produce vascular mapping. Multiplanar and three-dimensional reconstructed MDCT images are useful in the evaluation of the vascular pathologies, especially in the neck where anatomy is complex. However, other modalities such as magnetic resonance imaging and venography can also be used for confirming the diagnosis.

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#### **Conflicts of interest**

There are no conflicts of interest.

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