CASE REPORT

Eagle syndrome; radiological evaluation and management

Ahmed Kamal,[1] Rashed Nazir,[2] Muhammad Usman,[3] Badar-us- Salam,[4] Farah Sana[5]

Abstract

Eagle syndrome is a rare condition where elongated temporal styloid processes, or calcified stylohyoid ligaments, are in conflict with the adjacent anatomical structures giving rise to a complex range of symptoms including otalgia, dysphagia, foreign body sensation in throat, pain along carotid artery distribution and others. Commonly, the syndrome is documented to be unilateral. However, bilateral cases are also reported though rarely. Multislice computed tomography scan with 3D reconstruction can be really helpful in diagnosing the elongated styloid processes and their mass effect on the surrounding adjacent anatomical structures. Scan is also helpful in deciding further management and guides the surgeon on how and from where to approach the surgery.

We present here a case of a 37-years-old man with significantly enlarged and thickened bilateral styloid process causing significant characteristic symptoms.

Keywords: Otalgia, Multislice CT, Calcified stylohyoid ligament.

Introduction

Enlarged styloid processes or calcified stylohyoid ligament causing mass effect on the adjacent structures, the nerves and vessels resulting in cervical and craniofacial pain along with other symptoms is stated as Eagle syndrome. The symptoms are variable and depend on the structure on which the styloid processes are causing compression and mass effect. The nerves and vessels that can be involved include cranial nerves VII, IX, X and XII, internal jugular vein and the carotid artery.[1]

Although orthopantomogram (OPG) and conventional radiographs can provide idea about the abnormality, but the studies are very limited due to superimposed structures and incomplete details. Multislice and 3D-computed tomography (CT) is documented to be the best modality in this regard as they have dual benefits.[2,3] They show the detailed anatomy and hence the pathology which can then easily be correlated with the symptomology of the patient and is also helpful in the further management, planning and tailoring of the surgical approach.[3]

Case Report

A 37-years-old male presented with the complaint of neck pain on the left side for the preceding 5 years. He experienced this pain on and off and it was more during swallowing, chewing and yawning. The pain also aggravated on stretching and turning the head on one side. He also complained that sometimes he experienced piercing pain to his left ear which disappeared after a while. There was no associated history of trauma. The patient gave history of abscess formation on the left side of neck 2 years earlier which was cured by antibiotics, and he reported that his symptoms aggravated after that.

The clinical examination was done by an otorhinolaryngologist which was unremarkable and a CT scan was requested. The CT was performed on 320 slice CT with 1mm and 0.5mm thickness reconstructed images. Besides, 3D reformatting of images was also done.

The CT scan showed bilaterally enlarged styloid processes with their lower tips at the level of hyoid bone anteriorly, along inferior margin of the base of tongue measuring 8-9cm (Figure-1 and 2). The scan also showed the relationships of surrounding structures with the enlarged styloid processes. They were found to be in close proximity with carotid jugular complex.

The patient underwent surgery through an external

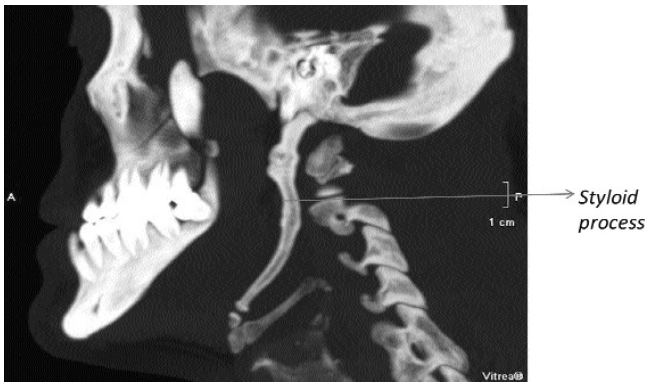

Figure-1: Sagittal view showing enlarged styloid process reaching up to hyoid bone.

[1-3,5]Department of Radiology, [4]Department of Otorhinolaryngology, Shifa International Hospital, Islamabad.

Correspondence: Ahmed Kamal. Email: dr.ahmed1988@ymail.com

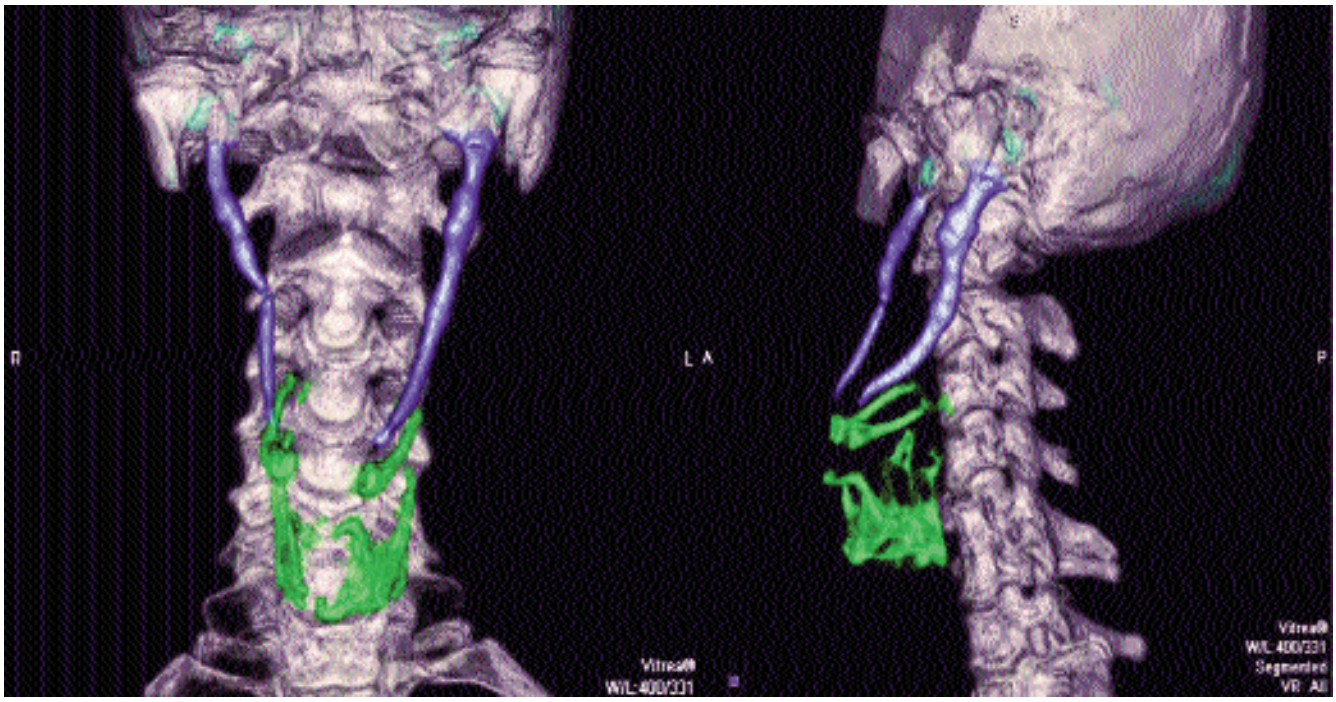

Figure-2: 3D reformatted images showing bilateral enlarged styloid processes (in blue).

approach and 3cm of left styloid process, the symptomatic side, was resected. The post-operative stay of patient at hospital was uneventful. Two-month follow-up of the patient showed marked relief in symptoms.

Discussion

The styloid process is a slender pointed outgrowth from the temporal bone's inferior surface, which moves downwards and anteriorly toward the maxillo-vertebro-pharyngeal recess, which contains carotid arteries, internal jugular vein and cranial nerves including VII, IX, X and XII. The normal length of the styloid in an adult is approximately 2.5cm whereas an elongated styloid is generally more than 3cm in length[1,4] which, when it is a causative factor, is called Eagle syndrome.

The syndrome was first described in 1937 by the Watt Weems Eagle, an American otorhinolaryngologist.[4] Only small percentage of diagnosed patients i.e. 4% of the general population with enlarged styloid process is symptomatic, hence giving the actual incidence of about 0.16%.[5] The syndrome usually affects people of age 30. Depending on the underlying aetiology and the anatomical structures compressed or irritated by the styloid process, symptoms vary greatly, ranging from cervicofacial pain to cerebral ischaemia.

The aetiology of elongation of styloid process is still unknown. Various causes are suggested in literature and include congenital elongation, ossification of the stylohyoid ligament and osseous tissue growth at the insertion of stylohyoid ligament.[1,5]

In terms of clinical expressions, classic styloid syndrome is characterised by dull and persistent pain in orapharynx and face. The pain is actually centred in the tonsillar fossa that refer to the ipsilateral ear and get exacerbated by swallowing, yawning and chewing. Patient can also complain of dysphagia, globus sensation and tinnitus can also occur.

Also, the stylo-carotid syndrome is an entity of Eagle syndrome in which the internal or external carotid artery along with their peri-vascular sympathetic fibres are compressed by the enlarged/calcified styloid process. Patient complains of pain along the distribution of the artery, which is provoked and exacerbated by rotation and compression of the neck.

Several imaging modalities can be used for the diagnosis of Eagle syndrome, including conventional lateral and anteroposterior (AP) views of head and neck radiograph, Towne's view, OPG and CT.[2,3,6] The OPG can easily miss the findings, especially if styloid processes are not so long, due to superimposed teeth and mandible. Similarly, the conventional radiographs are also very non-specific and limited in this context. Multislice CT and 3D reconstruction is considered the best modality as it

provides information about the actual length of the processes and their tract, and whether deviated medially or laterally along with the details of their relationship with other anatomical structures. Other related anatomical variants can also be documented before any surgical planning and intervention.[6,7]

The treatment plan includes both medical and surgical options. Medical therapy includes reassurance, analgesics and anti-inflammatory medications.

Severe cases are dealt with surgically using two approaches, intraoral or external, with both having their own advantages and disadvantages.

Conclusion

Multislice CT scans with 3D reconstruction can be helpful in diagnosing the elongated styloid processes and their mass effect on adjacent anatomical structures.

References

1. Baig S, Patil N, Considine N. An unusual cause of recurrent throat pain-calcified stylohyoid ligament. J Coll Physicians Surg Pak 2012; 22: 258-60.
2. Murtagh RD, Caracciolo JT, Fernandez G. CT findings associated with Eagle syndrome. AJNR Am J Neuroradiol 2001; 22: 1401-2.
3. Savranlar A, Uzun L, Birol M, Ozer T. Three-dimensional CT of Eagle's syndrome. Diagn Interv Radiol. 2005; 11: 206-9.
4. Eagle WW. Elongated styloid process: symptoms and treatment. Arch Otolaryngol 1958; 64: 172-6.
5. Chandra Prasad M, Panduranga Kamath K, Jagan Mohan Reddy, Krishnam Raju, Saurabh Agarwal. Elongated Styloid Process (Eagle's Syndrome): A Clinical study. J Oral Maxillofac Surg 2002; 60: 177-5.
6. Karam C, Koussa S. Eagle syndrome: the role of CT scan with 3D reconstructions. J Neuroradiol 2007; 34: 344-5.
7. Subramaniam S, Majid MD. Eagle's syndrome. Med J Malaysia 2003; 58: 139-41.