Elongated styloid process - a cause for cervical pain.

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Abstract

The normal length of the styloid process is 20-25 mms. A diagnosis of Eagle's syndrome is made when the styloid process measures more than 30 mms. The symptomatology associated with an elongated styloid process is called Eagle's syndrome. Abnormal elongation of styloid process causes compression of important neurovascular structures situated in close relation to it resulting in chronic neck pain, referred pain to the ear, jaw and orbit, and globus hystericus. We report here two cases of elongated styloid processes found during our routine osteology demonstrations. The etiopathogenesis and clinical implications of an elongated styloid process are discussed.

Key words: styloid process, Eagle's syndrome.

Introduction

Eagle in 1937 first defined "Stygalgia" an entity related to abnormal length of styloid process or mineralization of the stylohyoid ligament complex. This symptom complex is called Eagle's Syndrome¹.

The styloid process is a thin, cylindrical, sharp long process from the lower surface of the petrous part of the temporal bone. The process is directed downwards anteriorly and slightly medially. The apex of the styloid process is connected with the lesser cornu of the hyoid bone through the stylohyoid ligament. All these together comprise the stylohyoid ligament complex. Embryologically, the styloid process is a derivative of Reichert's cartilage. The length of the styloid process normally varies from 20 - 25 mms in adults².

The styloid process is situated behind the tonsillar fossa and between the internal carotid and external carotid arteries. The facial nerve emerges posterior to the styloid process and the vagus and accessory cranial nerves are related medially to the styloid process. The glossopharyngeal nerve is also in close proximity to the styloid process². The length of the styloid process is considered elongated when it is longer than 30 mms and this condition has been found to occur in 4-7 % of the population⁵.

Case report

During routine Osteology demonstration sessions two adult skulls were found to have abnormally long styloid processes. The length of the styloid processes were measured using a measuring scale from the cranial base to its tip. The medial deviations were measured using a protractor and scale.

In skull I, the length of the right and left styloid processes were different and found to be 39 mms on the right side and 22 mms on the left side respectively (Fig. 1a). The medial deviation of the styloid process was 21⁰ on the right and 14⁰ on the left. (Fig.1b)

In skull II, the length of the styloid process was 52 mms on the right side and 60 mms on the left side. (Fig.2a) The medial deviation of the styloid process on the right side was 38⁰ and on the left side was 30⁰. (Fig.2b)

Discussion

The length of the styloid process normally varies between 20 - 25 mms in adults. In recent times the length of the styloid process has been studied widely using radiographs and 3D CT scans. The lateral views best show the length of the styloid process but anteroposterior views are needed to determine the bilateral involvement and medial deviation⁴.

Kaufmann et al⁶ and Keur et al⁷ have suggested that diagnosis of elongated styloid process can be made if the length is more than 30mm. Monsour and Young have stated that styloid process can be considered elongated if the length is more than 40mm when it becomes symptomatic⁸. Thot et al have reported that average
length of styloid process in Indian adults is 1.52-1.59 cms and stresses that the angulation of styloid process is the cause of Eagle’s syndrome⁹.

Elongated styloid process is an important cause for chronic head and neck pain, foreign body sensation in the throat, difficulty in swallowing and referral pain to the ear. In living persons, the symptomatology of Eagle's syndrome is due to either direct mechanical irritation or to the involvement of the neurovascular structures which lie in close relation to the styloid process⁶ and sometimes referral pain along the distribution of internal carotid artery or external carotid artery, whichever is affected¹. Most patients with elongated styloid process are asymptomatic and are identified incidentally at imaging or at postmortem examination. The incidence of eagle's syndrome is more common in elderly female population.

According to Steinmann there are several different theories which try to explain the etiopathology of Eagle’s syndrome¹⁵.

1. Surgical Trauma or chronic localized irritation causes osteitis and periostitis of stylohyoid ligament resulting in reactive ossifying hyperplasia. This occurs due to mesenchymal remnants that are capable of producing osseous tissue in adults.
2. An abnormal posttraumatic healing or mechanical stress during development of styloid process that
can cause osseous metaplasia resulting in calcification of stylohyoid ligament.

3. The abnormally long stylohyoid process can occur as an anatomical anomaly which occurs as an autosomal recessive character.

The diagnosis can be made by physical bimanual digital palpation of stylohyoid process in the tonsillar fossa and is confirmed by 3-D CT scan. The presence of an elongated stylohyoid process when symptomatic has to be treated by infiltration with anaesthetic solutions or steroids. Surgical removal of the stylohyoid process is the treatment of choice\(^3\).

In the present report, skull II had an elongated stylohyoid process which measured 39 mm on the right side and a normal stylohyoid process of 22 mm on the left side. The medial deviation of right stylohyoid process was 20° and the left stylohyoid process was 14°. In skull II, there was a bilateral elongated stylohyoid process. The length of the stylohyoid process was 52 mm on the right side and 60 mm on the left side. The medial deviation of the stylohyoid process on the right side was 38° and on the left side was 30°.

This elongated stylohyoid process of skull I on the right and both stylohyoid processes of the skull II with its remarkable medial deviations would have definitely caused symptoms to the individual during lifetime.

**Conclusion**

Eagle’s syndrome is a frequently missed diagnosis which should be borne in mind by practitioners when evaluating cases with chronic head and neck pain. An awareness of this syndrome is important to physicians, otorhinolaryngologists and dentists to make the diagnosis in patients with suggestive symptoms.

**References**