BILATERAL ELONGATED STYLOID PROCESS: A CASE REPORT

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ABSTRACT

An abnormally elongated styloid process may be the cause of undiagnosed cervico-facial pain and remains a diagnostic challenge. We report an unusual case of bilaterally elongated styloid process in a macerated adult skull. The probable etiology and symptomatology of the present case have been discussed, in view of available literature in this paper. The present report emphasizes the need of routine investigations for the possibility of elongated styloid process as a part of differential diagnosis in cases of unexplained throat and ear pains.

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INTRODUCTION

Styloid process (SP) is a cylindrical bony projection arising from the tympanic part of temporal bone, immediately anterior to stylomastoid foramen [1]. Its apex is clinically important as it is located between the carotid arteries [2] and is connected to lesser cornuae of hyoid bone by stylohyoid ligament. The significant cranial nerves like facial, glossopharyngeal, vagus and accessory nerves run in close proximity to SP. The SP, stylohyoid ligament and lesser cornuae of hyoid bone constitute the stylohyoid chain which develops from the cartilaginous elements of Reichert’s cartilage, derived from second pharyngeal arch [1]. The SP varies in size and morphology and could be long enough to cause compression of adjacent vital structures [3]. This paper documents a case of bilaterally elongated Styloid Process (ESP) in a dry adult skull.

Case Report

During an inspection of the osteological collection of Anatomy department of Katuri Medical College, we came across a dry skull with abnormally elongated styloid processes. (Figure 1) The lengths of the SP were measured from the base of the skull to the tip using a digital calliper. The SP measured 5.0 cm on left side and 4.8 cm on right side. Both left and right SP revealed a thickening in the middle. (Figure 1) The thickening observed could possibly represent the site of the union between the apex of the SP and the ossified part of the stylohyoid ligament.

Figure 1: showing bilateral elongated styloid process (*). RSP: right styloid process, LSP: left styloid process, ZA: zygomatic arch, MT: maxillary tuberosity, TP: tympanic plate, MP: mastoid process, FM: foramen magnum.
Discussion

The normal length of SP ranges from 0.5-2.5 cm and a length more than 2.5 cm was considered elongated [4]. However, other studies accepted 3.0 cm as elongated [5,6]. Whereas, Jung et al stressed that a length more than 4.0 cm should be considered abnormal [7]. Though the threshold for elongation is highly variable and range from 2.5-4.0 cm, many authors considered 3.0 cm as the threshold for elongation [2]. In the present study, we report a case of bilaterally elongated SP of 4.8 cm and 5.0 cm on right and left side respectively, which exceeds the normal range. (Figure 1)

The incidence of ESP seems to range from 4% to 18% [8,9], probably due to varied thresholds accepted for elongation, methodology applied for estimating the length, anatomic/ surgical/ or radiologic specimens investigated and ethnic variabilities [3]. The affected subjects are usually elderly, afflicting females more frequently than males [8,10]. Three types of variations were observed; Type 1: continuous ESP, from long to completely ossified structure connecting the SP to lesser cornuae of hyoid bone, Type 2: pseudo-articulated segments of bones in the stylohyoid fibrous matrix, Type 3: segmented non continuous elements of stylohyoid chain [11]. The present case seems to be the type 1 variation proposed by Langlis et al in 1986. The variations are in majority cases, bilateral and symmetrical as observed in the present case [8].

The etiology of abnormally ESP is still under discussion; the suggested hypotheses are hereditary, embryology, metaplasia, trauma and ageing [12]. Hardy et al observed co-existence of ESP and vertebral and laryngeal calcifications with foramen arcuate [8]. He argued for a genetic origin of these variations. Several authors have associated ESP with other conditions like: cervical osteophyte and cervical spondylodisc [13]. Kim et al (2012) reported a case of severely ossified stylohyoid ligament complex in twins with same pattern of presentation which probably implies that there might be a genetic factor associated with SP elongation [14]. Significant correlation was found between the length of SP and serum calcium concentration levels [15]. Meanwhile significant differences were reported in the morphology of stylohyoid chain between Londoner’s and Chinese depicting the ethnic variability [16].

A wide variety of symptoms have been attributed to ESP, including no specific cervical pain, throat pain radiating to ear & orbit, dysphagia, odynophagia, increased salivation, foreign bodies sensation and cerebro-vascular symptoms induced by positional changes [12]. A constellation of associated symptoms is termed as Eagle’s syndrome, which derived its name from Watt Weems Eagle, an American Otolaryngologist who first described the clinical sequelaes associated with ESP [4]. The symptoms are non-specific and can be confused with a wide variety of disorders such as gastro intestinal malignancies, salivary gland diseases, neuralgia, temporomandibular joint dysfunctions, dental malocclusion and hyoid bursitis [9]. The symptomatology has various origins. The cranial nerves such as glossopharyngeal, vagus, mandibular or chorda tympani can be directly stimulated by the ESP and induce pain. The other symptoms including inflammation of tendons, pharyngeal mucosa excitation, impact of carotid bulbs and dizziness are attributed to involvement of carotid arteries [3, 6].

The present case of abnormally long styloid process could have caused variety of symptoms and psychotraumatic stress to the person but might have been overlooked during clinical examinations.

CONCLUSION

The clinical symptoms associated with ESP can be mistaken with those attributed to a wide variety of cervicofacial neuralgia, oral, dental or temporomandibular disease. Hence, the probability of ESP should be considered in the differential diagnosis, when patients present with symptoms of cervicofacial pain.

The present report highlights the need of including the possibility of ESP as a routine part of differential diagnosis especially in cases of unexplained throat and ear pains.

Competing Interests

The authors declare no conflict of interest.

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