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Eagle's syndrome related to ossification of stylohyoid ligament diagnosed with multislice computed tomography. A case report

Styloid process is a structure of great variability, however, in majority of patients it does not exceed 30 mm. According to Monsour and Young (3) "long" styloid process is considered in cases longer than 40 mm. Elongated styloid process (ESP) was first described in 1652 by Italian surgeon, Pietro Marchetti. Signs and symptoms related to ESP or to mineralization of the stylohyoid ligament complex were described by Eagle in 1937, and the name of Eagle's syndrome is currently used in symptomatic patients. Most common (5) symptoms of Eagle's syndrome include earache, vague pain in the neck, foreign body sensation, pharyngeal pain, pain on swallowing or on changing head position. The symptom is more often described in female, more than 50 years old patients (4). ESP is observed in 4 – 7% of population, and symptoms of Eagle's syndrome are observed in about 4 – 10% of ESP group (2).

Computed tomography is a recognized method of evaluation of styloid process and ossified stylohyoid ligament thanks to visualisation of of these, as well as surrounding structures, possibility of precise measurement of its length and angulation, and application of three-dimensional reconstructions (1).

CASE REPORT

C.W., a 41-y-o. otherwise healthy male presented at ENT ambulatory. Main complaint on admission was severe pain of the right side of the face, upper neck and throat. The pain started gradually few months before admission and has been slowly worsening. No relation of the presence and/or intensity of pain to swallowing or head position was noticed by the patient. The patient had no history of surgical procedures in the area. On physical examination a palpable mass in anterolateral neck was identified. The patient was referred to Radiology Department to have CT examination of neck performed.

Multislice computed tomography (MSCT) was conducted with 8-row computed tomograph Light Speed Ultra (GE Medical Systems). Native scanning with 1.25 mm collimation was performed. The original scans were postprocessed with Advantage Window 4.0 workstation, using multiplanar reformations with maximum and 3D volume rendering for the evaluation of topography of neck structures. The computed tomography examination showed extensive elongation of left styloid process, with its total length of 50.14 mm and 26.43 mm long right styloid process with massive ossification of stylohyoid ligament, which added to total length of 57.04 mm. Medial angulation of both processes was within normal range (1). Currently the patient is treated conservatively.

DISCUSSION

Stylohyoid chain, or complex, consists of styloid process, stylohyoid ligament (SHL) and cornu minus of the hyoid bone. The complex occupies maxillo-vertebro-pharyngeal space, where other structures are localized, as carotid arteries, internal jugular vein, and cranial nerves: facial, glossopharyngeal, vagus and hypoglossal. Eagle's syndrome may occur in two forms, classical stylohoid syndrome, almost exclusively related to tonsillectomy, with faintly developed symptoms, and stylocarotid syndrome, where the symptoms are related to compression of nervous and/or vascular structures by elongated styloid process. No satisfactory pathogenesis of elongation of styloid process has been suggested, and explanations considered include postsurgical or posttraumatic hypertrophy, congenital elongation and ossification of stylohyoid ligament (1). Rare occurence of Eagle's syndrome limits the amount of comparable data on features of styloid process and stylohyoid ligament in the patients. However, the influence of medial angulation on the presence of symptoms was suggested (1), no significant difference between the sides was found in the presented case.

Eagle's syndrome is treated both conservatively and surgically. Conservative management includes injection of steroids or local anesthetics at the palpable styloid process in the tonsilar fossa or at the cornu minus of hyoid bone. The aim of surgical treatment of ESP is shortening of the process, by intraoral or external approach. Intraoral approach is usually preferred (6) because of the quick and simple surgical technique and no external scar, however, the risks include deep cervical infection and traumatization of external carotid artery or facial nerve. Multislice computed tomography is becoming an effective imaging method of ESP. Its advantages include evaluation of morphology, precise measurement of length and angulation of styloid process and stylohyoid ligament, visualisation of surrounding structures, availability of three-dimensional reconstructions for both planning the therapy and patient education.

Eagle's syndrome is a typical condition where complementary clinical history, physical examination and diagnostic imaging are necessary for proper diagnosis. Eagle's syndrome, however rare, should always be considered in patients with neck pain.

Fig. 1. Anterior view of base of skull and cervical verterbral column, volume rendering reconstruction. Right styloid process – arrowhead, arrow – right stylohyoid ligament, double-crossed arrow – left styloid process

Fig 2. Right posterolateral view of base of skull and cervical verterbral column, volume rendering reconstruction. Right styloid process – arrowhead, arrow – right stylohyoid ligament

Fig. 3. Left posterolateral view of base of skull and cervical verterbral column, volume rendering reconstruction, double-crossed arrow – left styloid process

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SUMMARY

The paper reports a case of a 41-year-old man with signs of Eagle's syndrome, whose multislice CT of neck revealed massive ossification of stylohyoid ligament on the side of occurence of symptoms and elongation of styloid process on the opposite side. The CT presentation and possibilities of 3D volume rendering reconstructions are shown. Clinical signs and symptoms and diagnostic imaging presentation as well as clinical considerations are discussed.

Przypadek zespołu Eagle'a u pacjenta ze zwapnieniem więzadła rylcowo-gnykowego – obraz w wielorzędowej tomografii komputerowej

W pracy przedstawiony jest przypadek 41-letniego pacjenta z objawami zespołu Eagle'a, u którego stwierdzono badaniem TK masywne zwapnienia w więzadle rylcowo-gnykowym po stronie występujących objawów i znacznego stopnia wydłużony wyrostek rylcowaty po stronie przeciwnej. Przedstawiony jest obraz TK zmian, szczególnie możliwości trójwymiarowych rekonstrukcji *Volume Rendering*, oraz możliwości postępowania terapeutycznego.