



Pathology Biology Section – 2006

G62 Eagles Syndrome: Case of an Elongated and Ossified Stylohyoid Ligament in an Elderly Female

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After attending this presentation, attendees will be able to recognize cases involving Eagles Syndrome and have a basic understanding of the mechanisms, which may result in this bony anomaly, and associated symptoms.

This presentation will impact the forensic community and/or humanity by providing death investigators with information to ascertain the presence of the skeletal anomaly Eagle Syndrome and how it may or may not be involved in the death of the deceased.

The case presented is that of a 72-year-old Negroid Female whose badly decomposed and, partially skeletonized remains were recovered from her residence in Baltimore, Maryland. Local police were called to the residence of the deceased, by neighbors who reported a fowl smell. Investigation of the scene found the deceased lying in her bed clothed. Police found no evidence of forced entry into the residence, or other evidence indicative of foul play. Relatives of the deceased reported that she was last seen alive approximately one month prior, during the summer months. Examination of the body at the Office of the Chief Medical Examiner in Baltimore, Maryland, found it to be in an advanced state of decomposition with partial exposure of the skull and upper thoracic cavity. Inspection of the chest and abdominal cavity revealed the absence of the internal organs as a result of decomposition. No injuries or notable defects were observed on the remains with the exception of an extraordinarily long, and irregularly shaped left styloid process of the skull.

The extremely large and lengthy styloid process was recognized as "Eagle syndrome" which is described as the elongation of the styloid process and stylohyoid ligament calcification. Eagle syndrome has been named under several other synonyms including stylohyoid syndrome, hyoid syndrome, styloid elongation syndrome, styloid process syndrome, and carotid artery syndrome. The syndrome is well documented in the dental and otolaryngology literature however it has not been widely reported in radiological and general pathological literature. Multiple symptoms are associated with Eagle syndrome, which includes cough, dizziness, recurrent throat pain, voice alteration, dysphasia and /or facial pain, and sensation of a foreign body present in the throat. It has also been reported that that approximately 4% of the general population is thought to have elongation of the styloid process, and that only a small percentage of those individuals 4% to 10%, are thought to be symptomatic.

Anthropological studies have documented the prevalence of elongated styloid process, in particular the high frequency of occurrence among various Mongoloid populations. The average length of the styloid process in adult is approximately 2.5 cm, and in most individuals there is little variation in length between left and right process. Eagle syndrome has been documented as occurring unilaterally or bilaterally. Recognition of Eagle syndrome is rare among the forensic case population unless it is noted during detailed radiographic examination of lateral views of the head and neck, or during gross examination of skeletonized remains. Most cases are picked up by dentists or oral surgeons during routine panoramic radiographs, or by physical examination involving palpation of the elongated styloid process in the tonsillar fossa, of those individuals who are symptomatic.

In the case of the elderly Negroid female, the recognition of Eagle syndrome was made during removal mummified and decomposed tissues surrounding the skull. The left styloid process measured approximately 8 cm in length, and had an average circumference of approximately 2.5 cm. Not only did the left styloid process look extremely large, but it had the appearance as if three medial phalanges had been fused together. Examination of the right side of the skull found the right styloid process to be near non-existent, measuring less than 5 mm in length. Close inspection of the left carotid foramen revealed evidence of significant narrowing resulting from the enlargement of the base of the styloid process. A review of the deceased medical records obtained by investigators later in time, provided documentation of Eagle syndrome which had been noted during a dental panoramic exam in 2003 to access periodontal disease. According to the medical records, the elderly woman was asymptomatic at the time of the exam. Documentation of Eagle syndrome provided a means of positive identification of the deceased. In regards to cause and manner of death, the absence of trauma, and documented history of heart disease, and negative toxicology, the case was signed out as hypertensive atherosclerotic disease -natural.

The cause of the elongation of the styloid process is not well understood. Multiple theories have been forwarded including congenital elongation, growth of osseous tissue at the insertion of the stylohyoid ligament, and calcification of the stylohyoid ligament by an unknown process. Pathophysiological mechanisms of symptoms is also contested which include irritation of pharyngeal mucosa by post-tonsillectomy scarring or by direct compression, traumatic fracture of the styloid process resulting in proliferation of granulation tissue, inflammatory or degenerative changes in the tendon, and impingement of the carotid vessels thus irritating the sympathetic nerves of the arterial sheath.

Eagle syndrome can be treated by surgical and no surgical intervention. No surgical treatment includes steroid injections and other anti-inflammatory medications. Surgical treatment involves removal of the elongated



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portion of the styloid process.

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