

Sudden Death due to Eagle syndromeDayananda R¹, Kishor Kumar D G², Anand P Rayamane¹, Kumar M P³, Ashish Saraf²**Abstract:**

Eagle's syndrome (ES) represents a group of symptoms that includes recurrent throat pain, dysphagia, referred otalgia and neck pain possibly caused by elongation of the styloid process or ossification of the stylohyoid ligament. Various theories have been put forward toward the development of Eagle syndrome. An elongated styloid process occurs in about 4% of the general population¹, while only a small percentage of patients are symptomatic. There is a female-to-male predominance of 3:1. The symptoms related to this condition can be confused with those attributed to a wide variety of facial neuralgias

We report the case of a 43 year-old man who died in a road traffic accident without any fatal injuries. The autopsy only discovered bilateral ossification of the stylohyoid ligaments and minor injuries. The microscopic and toxicological investigations showed strictly normal results. The cause of death and the circumstances involved in it are discussed under the framework of these ligament anomalies, called "Eagle syndrome". Indeed, the circumstances involved in the death led to envisaging an abrupt pressure from the vasculo-nervous structures of the neck on the ossification of the stylohyoid ligaments, during rotation of the neck

Key Words: Eagle syndrome, Stylohyoid ligament and Sudden death

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Introduction

Eagle syndrome was first documented by Wart W. Eagle, an otorhinolaryngologist in the year 1937². The styloid process and the stylohyoid ligament are second branchial arch derivatives. They are first formed as cartilage. The cartilage of this styloid process ossifies while the epiphyseal cartilage, which connects the styloid process and the hyoid bone, is usually reabsorbed³. The stylohyoid ligament is formed from the remnants of the epiphyseal cartilage³. Previously Eagle syndrome was considered to be due to surgical trauma (tonsillectomy) or local chronic irritation causing osteitis, periostitis, or tendonitis of the stylohyoid complex with consequent reactive, ossifying hyperplasia. In the later years, it was argued that ossification of the styloid process is related to the endocrine disorders in women at menopause, persistence of the mesenchymal elements (Reichert cartilage residues) that undergo osseous

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metaplasia as a consequence of trauma, or mechanical stress during the development of the styloid process. However, Eagle syndrome has been noted in children and also in individuals who have not been subjected for tonsillectomy. As per the theories of various persons, the following factors may be considered:

The ossification of the stylohyoid ligament complex, causing contraction of the stylopharyngeal muscle and stretching of the XII cranial nerve.

The fracture and medialization of the ossified stylohyoid ligament, with incomplete repair due to continuous hyoid bone movements and formation of excessive granulation tissues.

The ossification of muscular tendons leading to irritation of the structures nearby.

The abnormal length associated with abnormal angulation of the styloid process.⁴

Sudden death is defined as abrupt and unexpected death of a person in healthy individual that occurs within one hour⁵. This is a rare case which envisages an exceptional cause of unexpected sudden death linked to Eagle syndrome.

Case report

A 43 year-old male dead body was brought for autopsy. The police came out with the information that the deceased was a pedestrian and was hit by a bike. He was immediately taken to a hospital and was given first aid for few abrasions sustained. He went home and then suddenly collapsed. Upon interrogation with the next of kin, it was found that the deceased had frequent episodes of headache for which he was evaluated with many doctors without fruitful results. According to his family doctor, he had no previous medical or surgical history, was not taking any treatments, and did not take any drugs. He simply had a proclivity for being much stressed.

During postmortem examination, no remarkable external appearance was noted except for few abrasions over the knee and elbows. His internal findings were also unremarkable. To the contrary, dissection of the neck was hindered by two rigid structures. Two calcified processes of the two stylohyoid ligaments were dissected (Fig. 1). The length of the styloid process in the present case was 4.6 cm and 4.8 cms in length respectively. The tip of the styloid process had not penetrated any tissues. Histopathology opinion was sought for any visceral pathology, which was negative. Toxicological analysis was unremarkable.

Discussion

This case presented leads to several questions being raised. A 43 year old healthy individual was hit by a bike leading to few abrasions and no fatal injuries. What was the cause of death? Did the deceased die due to RTA or was it a natural death? , which has enormous forensic implications.

We made a thorough search of the available literature in which deaths were attributed to the

Eagle syndrome⁵. The deceased did not present with any symptomatology prior to death that could match one of the two types of Eagle syndrome. But in Eagle's syndrome, the symptoms range from mild discomfort to acute neurologic. The symptoms may be confused with episodic physical disorders. It is possible that the person could not complain about these non-specific symptoms

In our case, the death of middle aged man occurred under circumstances suggestive of rotation and abrupt extension of the neck. As per our hypothesis, the rotation and extension of the neck during the fall and subsequently, which was probably vigorous, may have provoked a forced, exaggerated bearing down by the vascular and lateral nerve elements of the neck on the rigid structure of the left stylohyoid chain.

Fig 1 – The picture shows elongated styloid process.



Conclusion

After ruling out all other causes of death by meticulous autopsy, histopathological examination and chemical analysis, the death was attributed to the elongated styloid process. In the present case, the sudden death is probably due to vagus-mediated cardiac inhibition as a result of Eagle syndrome.

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