Anatomical Variation of Hyoid Bone: a Case Report

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ABSTRACT

Hyoid bone is a solitary bone localized at the level of cervical 3 vertebrae, connected to the adjacent bone structures with muscles and tendons. Anatomical variations of hyoid bone can cause difficulties in the application of forensic medicine together with clinical and surgical problems. We present a case of an 81-year-old woman, reported to got sick, who died at home. In the autopsy, the neck dissection revealed prolonged right and left greater horns of hyoid bone measured 11 cm and 7 cm respectively. We aimed to present a case with long hyoid bone horns and discuss recent literature.

Keywords: autopsy, hyoid bone, variation

INTRODUCTION

Hyoid bone is a horseshoe-shaped, solitary bone localized at the level of the third cervical vertebrae in front of the neck, just above thyroid cartilage, in the midline of neck. Unlike other bones, the hyoid bone is connected to the adjacent bone structures through muscles and tendons (1). Hyoid bone consists of the corpus, two greater horns and two lesser horns in total, both on the right and left sides. In embryological process, greater horns are developed in the second and lesser horns are developed in the third visceral arch.

The process of ossification of the hyoid bone takes place on six different points; at greater horns towards the end of pregnancy, on the body immediately after birth, in lesser horns ossification starts towards puberty, but ends of greater horns connected to the body maintaining the distinction of cartilage structure until the age of about 30 (2). The hyoid bone fractures have an important role in forensic medicine, especially a valuable finding in determining the cause and the manner of death concerning the neck region trauma. Abnormal sizes of hyoid bone and its horns and its anatomical variations can cause difficulties in the
application of forensic medicine together with clinical and surgical problems. For this reason while making an assessment at neck dissection during autopsy if hyoid bone abnormalities and anatomical variations encountered it should require caution. Hyoid bone abnormalities can be found together with the different clinical situations such as Pierre Robin Syndrome, cleft lip and palate (3). The aim is to present a case with abnormally long hyoid bone horns and discuss in recent literature.

CASE REPORT

We present the case of a 81-year-old female. She was reported to get sick and die at home. At external evaluation we noticed 17 cm of surgery scar on the lumbal vertebrae, 12-cm of horizontal course surgery scar which began under the xiphoid and extending to hub hole, 7 cm of surgery scar above the pubic region, and 2x1 cm of ecchymotic abrasion in the upper part of the right zygomatic region was observed. 10x3x5 cm-portion of the uterus was found prolapsed out of the vagina. At autopsy, the heart weighed 400 g and thrombus was detected in the first part of left coronary artery with atherosclerotic changes, narrowing the lumen on the arterial wall. Aortic and mitral valve surroundings were measured 9.5 and 10 cm respectively. In myocardial septum sections, 5x4 cm of scar tissue white discoloration due to previous myocardial infarct was observed macroscopically. At neck dissection, lengths of right and left greater horns of hyoid bone were measured 11 cm and 7 cm respectively (Figure 1-2). At histopathological examination of the samples taken from heart was revealed that expansion in cytoplasma of some myocytes, scarring area which composed mature connective tissue and eliminates myocardial tissue in heart samples. Destruction of alveolar walls, congestion and neutrophilic infiltration within the lumen of bronchioles were detected in lung samples. In samples prepared from the uterus, keratinized stratified squamous epithelium with subepithelial stroma tissue and congested vascular structures, erosion, ulceration, homogenization, necrotic changes and neutrophilic infiltration on the surface epithelium were observed. There was no significant finding at toxicological analysis. After autopsy the death was reported as cardiac failure.

DISCUSSION

Anatomical variations and anomalies of hyoid bone are defined in the literature beforehand and relationship of its morphological variations with different races and geographical locations are presented (2-8). Unur E at al. reported that hyoid bone lesser horns are longer than normal length and they found the lesser horns 2.2 cm, the greater horns 2 cm in their measurements in a 4-year-old girl who died as a result of carbon monoxide intoxication (2). Gök E at al. reported a case identified an anomaly of hyoid bone with an approximately 3.9 cm length extra bone structure connected to left side of corpus of the hyoid bone and no lesser horns (4). As a result of stiloid process’ being long or calcification of stilohyoid ligation (Eagle Syndrome) that is connected to stiloid proces and hyoid bone lesser horn, lower ends of calcific stilohyoid ligament can cause extension of lesser horns of hyoid bone (2,5). At our case bilateral greater horns are found longer than normal (right- 11 cm, left- 7 cm). In both genders and in different age groups, various differences are identified in vertebral levels localization and dimensions of hyoid bone by determining the hyoid bone developmental characteristics, localization, size and relationship between surrounding structures (6-8). The hyoid bone anomalies can be seen with findings such as cleft lip, cleft palate,
and micrognathia or associated with the disease Pierre Robin Syndrome (3). However, in our case no pharyngeal arch abnormalities associated with accompanying hyoid bone abnormalities were seen. Identification of hyoid bone abnormalities causing variety of clinical symptoms (9,10) and surgical and radiological problems (11) were reported previously, but in the presented case, there were not identified symptoms related with abnormal hyoid bone and cause of death.

CONCLUSION

In forensic medical practice neck anatomy and findings, especially as their importance is known in strangulation cases and population-based studies, are considered to provide important contributions to many fields about clinical and medico-legal approaches associated with it.

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