Bilateral Retrosternal Dislocation and Hypertrophy of Medial Clavicular Heads With Compression to Brachiocephalic Vein
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Citation

Abstract
A 36-year-old women with effort dyspnea for two years and venous congestion of the left arm for six months was hospitalized. She had no thoracic trauma history. Posterior dislocation of the bilateral sternoclavicular joints and a compression to brachiocephalic vein were diagnosed in computed tomography (CT). Reduction of the joint could not be performed because of the old dislocation and destruction of the joint in the operation. The heads of the clavicles were resected and the vein compression was eliminated. Six weeks later; venous congestion was gone and the brachiocephalic vein was been patent.

INTRODUCTION
Following thrombosis of vena cava superior and brachiocephalic vein, venous collateral pathways are developed via azygos-hemiazygos, internal mammary, lateral thoracic, anterior jugular and paravertebral veins. Thus, venous drainage of the upper part of the body can be obtained.

The severity of the clinical status is determined by the degree of the compression and duration of the collateral development. Clinical status is grave in acute events and it is quiet in slow progression. Some etiologic factors are; mediastinal masses, thymic cyst, intrathoracic goitre, anomalies of brachiocephalic artery, mediastinal radiotherapy, central catheterization, pathologies of the scalen muscle, and sternoclavicular joint (1,2).

The sternoclavicular joint consists of medial head of clavicle, first costal cartilage, and lateral edge of the manubrium. There is a relative unsuitability in the joint because of the medial head of the clavicle is bigger than the joint surface of the manubrium. For this reason, joint stability is secured by capsule, costoclavicular and sternoclavicular ligaments. Pathologies in this region are very important because the great vessels, trachea and esophagus are locate behind the joint.

We present a case who had effort dyspnea and left arm venous congestion with bilateral retrosternal dislocation and hypertrophy of the medial heads of clavicles accompanied with literature.

CASE REPORT
The patient who had right arm dominance was a 36 years-old female farmer. She suffered effort dyspnea for two years and paresthesia and weakness of the left arm for six mons. There is no history of gross trauma to thorax and shoulder regions. Mild cyanosis of the left arm, development of the venous collaterals in the shoulder region, and two centimeter circle difference between the two arms were found in the routine examination. There is a restriction in the elevation and inner rotation of the both arms. There is no pathology in the chest roentgenogram. The dupplex ultrasound reveals a decrease of flow rate in the left subclavian and brachiocephalic vein. Computed tomography showed that both sternoclavicular joints were displaced to the posterior sternal region (more prominent in the left) and a compression of the brachiocephalic vein (Figure 1).
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Figure 1
Figure 1: Bilateral retrosternal dislocation and hypertrophy of medial clavicular heads were shown in the computed tomography.

White arrow: indicates extremely compressed brachiocephalic vein.
CH: Medial head of clavicle
S: Manubrium sterni
J: Sternoclavicular joint
X: Secondary osseous mass

Nerve velocity of brachial plexus and its branches was within normal limits in the electromyography. During the operation, venous pressures were obtained with selective catheterization. The right internal jugular pressure was 7 mmHg, the left internal jugular pressure 13 mmHg, and the right atrial pressure 5 mmHg. Parsiyel upper sternotomy was performed. It was observed that the medial heads of both clavicles were dislocated to the posterior and the heads of the clavicles were hypertrophied excessively (conglomerate formation). Secondary bone masses, shown in CT (Figure 1, x), were excessive hypertrophied. The brachiocephalic vein was patent. Reduction of the sternoclavicular joint was not possible because of the excessive calcification and deformation. Heads of the clavicles compressing the brachiocephalic vein were resected. Additional pathologies were not observed.

Following the sternal closure, the right internal jugular vein pressure was 7 mmHg, the left jugular vein pressure was 9 mmHg and the right atrial pressure was 6 mmHg. Bilateral venous pressures were equalized by the fourth postoperative day. Circumferential difference between both arms disappeared and superficial venous collaterals were diminished in the sixth postoperatief week. The brachiocephalic vein was patent and compression could not be observed anymore (Figure 2).

Figure 2
Figure 2: Computed Tomographic viewing of the patient in the sixth postoperative weeks.

White arrow, indicates patent brachiocephalic vein
Black arrow, indicates remnant of medial head of the left clavicle

DISCUSSION
Central venous thrombosis (brachiocephalic vein, subclavioaxillar vein or jugular vein thrombosis or combination of all of them) is a very important and life threatening condition. Thrombosis of the brachiocephalic vein may cause oedeme of the left upper limb, headache, dizziness, lack of memory with intracranial venous congestion (3, 4). For this reason, etiologic factors might been well-known and eliminated with priority. Dislocation of the sternoclavicular joint is a rare etiologic factor and the diagnosis could easily be missed. In our case, it was dislocated. Compressive signs to trachea and brachiocephalic vein were predominant in our case. We thought that effort dyspnea for two years was related to tracheal compression. Two cm circumferential expanding in the left arm and superficial venous collateralization due to compression of brachiocephalic vein were observed. Usually, dislocations of the joints are related with trauma, however in our case, a history of the trauma was not be found. Excessive hypertrophy of the clavicular heads and deformed joint surface were supported by an old and unreduced
subluxation. Because the posterior dislocation causes to injury of great vessels, trachea and esophagus, it is a life-threatening status. Closed reduction in acute phase and open surgical correction in cronic phase is recommended. Jain and colleagueos have gained successfull results with first rib resection without reduction in cronicle posterior dislocation and thoracic outlet syndrome (5). We resected the clavicular heads for decompression of the vein as retrosternally because the joint structure was destroyed completely. Symptomatic improvement was obtained in the short period.

An alternative modality for venous compression treatment is a venous stent application (6). Although successfull results were obtained in different veins, in this situation, we did not prefer an intravenous stent application because of the extreme compression by the bone and the tracheal compression.

CONCLUSION

We think that compressive factors were promptly eliminated before thrombosis because the brachiocephalic vein is very important for the venous drainage of brain and left upper limb. Ideal procedure at the posterior sternoclavicular dislocation is reduction of the joint between clavicle, first rib and sternum. If the dislocation is older and the structure of the joint is degenerated, resection of the medial head of the clavicle would be adequate.

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References

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