Diaphragmatic Eventration: Autopsy Case Report

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ABSTRACT

Presented case was a 36-year-old deceased man with a sequel of poliomyelitis who was reportedly found death at home. On external examination at autopsy, deformity of the lower extremity secondary to poliomyelitis, and an obliquely coursing scar tissue 5 cm in length at the same level with the costal arch on the right axillary line were seen. On internal examination at autopsy, diaphragmatic eventration caused by bilateral elevation of the diaphragm towards thoracic cavity was detected. On the left side, stomach, spleen, and small intestines, and on the right side liver were pushed into the thoracic cavity. Cause of death was reported as heart failure of the patient with bilateral diaphragmatic eventration. We aimed to discuss rarely encountered diaphragmatic eventration in autopsy practice from a perspective of forensic medicine.

Keywords: diaphragm, eventration, forensic autopsy, poliomyelitis

INTRODUCTION

Diaphragmatic eventration is a rarely seen asymptomatic pathology which is generally diagnosed incidentally (1-3). Diaphragmatic eventration can present with a congenital or acquired disorder. Congenital diaphragmatic eventration is characterized by aplasia of the diaphragm muscle (2). Acquired diaphragmatic eventration is caused by phrenic nerve injury resulting in diaphragmatic elevation, and paralysis (3-7). We aimed to discuss rarely encountered diaphragmatic eventration in autopsy practice from a perspective of forensic medicine.

CASE REPORT

As reported by his family, our 36-old male patient who was found dead at home, had suffered from poliomyelitis when he was a child, and also treated for respiratory tract diseases. Preliminary investigation of the prosecutor evaluated the case as a suspect death, and sent the corpse to our institute for autopsy. External examination revealed a corpse with a height of 170 cm, and weighing 85 kg. Both his feet...
were introverted, and splayed. Deeper sole arch angle, and flexed toes, more prominent flexion of the thumb, atrophic and relatively thinner extremities below the knees were observed. Bilaterally, hypoplastic femoral region being less severe at lower femoral region was observed. An obliquely coursing scar tissue area 5 cm in length at the same level with the costal arch on the right axillary line was seen. On gross examination at autopsy, his heart (489 g), left (471 g), and right (355 g) lungs, and liver (2025 g) weighed as indicated. Both thoracic cavities were extremely constricted (Figure 1). Diaphragmatic crura in the thoracic cavity were elevated bilaterally, and diaphragmatic eventration was detected. Patchy areas of transparency, and extreme flacidity were seen on diaphragmatic crura (Figure 2). Intrathoracic herniation of the stomach, spleen, and small intestines on the left, and liver on the right side was disclosed. On macroscopic examination, the congestion was detected in the heart and in the lungs. For histopathological investigation tissue samples were taken from the internal organs and were fixed in 10% formaline and embedded in paraffin wax. Sections of 3-4 μm thickness were cut and stained with hematoxylin and eosin (H&E). On histopathological microscopic examination enlargement of myocytic cytoplasm, perivascular lipomatosis in the heart, edema and pigment-laden macrophages in the lung alveolar spaces were detected. Histopathological microscopic examination of the diaphragm muscle revealed very severe edema (Figure 3). The overall cause of death of the our patient was reported as heart failure.

**DISCUSSION**

Diaphragmatic eventration is a rarely seen asymptomatic pathology, which is generally diagnosed incidentally (1-3). Diaphragmatic eventration can be a congenital or acquired disorder. Congenital diaphragmatic eventration is characterized by aplasia of the diaphragm muscle (2). Acquired diaphragmatic eventration can be caused by phrenic nerve injury resulting in diaphragmatic elevation, and paralysis. However, as is seen in our case, it can develop as a consequence of poliomyelitis (3-7). Diaphragmatic eventration (2,3,5) is frequently reported as a diagnosis of the pediatric age group, however adult male cases like ours are rarely reported in the literature (4,6). Cases presented with acute respiratory distress secondary to diaphragmatic eventration (6) have been also reported in the literature, but some of the cases have been detected incidentally (4). In our case, bilateral diaphragmatic elevation into chest cavity, diaphragmatic eventration, intrathoracic herniation of the stomach, spleen, and small intestines on the left, and liver on the right side were observed. Patchy areas of transparency, and extreme flacidity were seen on diaphragmatic crura, and as indicated in some studies, extreme thinning was detected (5). Though on histopathological examination, congestion, and severe edema of diaphragmatic muscle fibers were found, in the literature independent from acute-chronic respiratory disease, morphological changes in
cases with diaphragmatic injury were reported as presence of inflammatory cells (8). For the radiological evaluation of diaphragmatic elevation, conventional PA, and lateral chest radiograms were used. However, it has been argued that these methods lacked discriminative power as for diaphragm paralysis, and fluoroscopic evaluations were reported as more helpful in the revealment of anatomical, and functional status of the diaphragm (7). Besides, minimally invasive diagnostic laparoscopy has been also recommended as a diagnostic modality (4). Though diaphragmatic paralysis, and eventration are different pathologies with respect to etiological factors, and symptomatic features, their treatments are the same. Among minimally invasive surgical techniques, diaphragmatic plication has established its success as a very effective method with lower morbidity (1-3,5,6). In addition, it has been reported that conservative approaches did not provide any benefit, and especially in symptomatic patients, dramatic improvements after surgical interventions were reported for very short periods (3,5).

**CONCLUSION**

Rarely encountered pathology, diaphragmatic eventration was discussed to emphasize the importance of postmortem analysis of diaphragm which is not oftenly examined during forensic autopsies. Forensic medicine doctors should investigate diaphragmatic lesions properly during their autopsy practices in order to aid in the detection of cause of death and also development of new management strategies for understanding different diaphragmatic pathologies.

Conflict of interests: none declared.

Financial support: none declared.

**REFERENCES**