



## BOCHDALEK HERNIA EVALUATED AS SUDDEN UNEXPECTED SUSPICIOUS DEATH: A CASE REPORT

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### Summary

A considerable part of forensic medicine cases involve sudden unexpected suspicious deaths. In such cases, it is essential to perform a medico-legal autopsy, for the following reasons: death occurs within a very short time, it is difficult to explain the cause and the mechanism of death; external factors or a person, might be involved in the death. Sudden unexpected deaths due to adult Bochdalek hernia had been reported rarely in the medical literature. In this study a sudden unexpected death case due to adult Bochdalek hernia was presented.

**Key Words:** Bochdalek hernia, Forensic autopsy, Sudden unexpected death.

### ANI BEKLENMEDİK ŞÜPHELİ ÖLÜM OLARAK DEĞERLENDİRİLEN BOCHDALEK HERNİSİ: BİR OLGU SUNUMU

#### Özet

Ani beklenmedik şüpheli ölümler adli olguların önemli bir bölümünü oluşturmaktadır. Bu olgularda ölümün kısa sürede meydana gelmesi, ölüm mekanizmasının ve nedeninin izah edilememesi, ölüm üzerine etkisi olan kişi ve/veya kişilerin ya da her hangi bir dış etmenin olabileceği şüphesi nedeniyle adli otopsi yapılması gerekmektedir. Çalışmamızda Bochdalek hernisine bağlı ani beklenmedik bir ölüm olgusu sunulmaktadır.

**Anahtar Kelimeler:** Bochdalek hernia, Adli otopsi, Ani beklenmedik şüpheli ölüm.

#### Introduction

A considerable part of forensic medicine cases involve sudden unexpected suspicious deaths. In such cases, it is essential to perform a medico-legal autopsy, for the following reasons: death occurs within a very short time, it is difficult to explain the cause and the mechanism of death; external factors or a person, might be involved in the death. Statistics reveal that the leading cause of sudden deaths in the world is cardiovascular disease. On the other hand, it is known that the actual causes of death show variability depending on a country's health system and the quality of the services provided. Congenital diseases such as Bochdalek hernia are found in the category of sudden unexpected suspicious deaths (1-6).

Bochdalek hernia was defined as a congenital posterolateral diaphragmatic hernia by Bochdalek, an anatomy professor, in 1948. It commonly occurs on the left side, being the most frequent type among congenital diaphragmatic hernias (7-10).

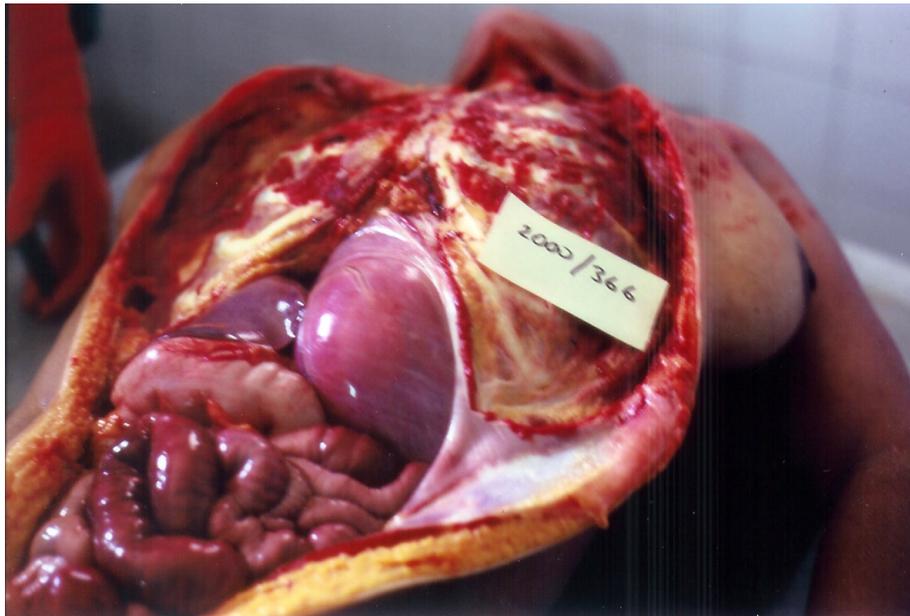
It is known that the septum transversum, which separates the thoracic cavity from the abdominal cavity, begins to develop at the back of the sternum and extends from the front to back, concluding its closure by the 10<sup>th</sup> week. As extra embryonic cholema closes, the intestines complete their rotation and return to the abdominal cavity. If a defect occurs while the septum transversum completes its closure from the front towards the back an, opening is left at the back and the intestines returning to the abdominal cavity are herniated to the thoracic cavity (4,7,8).

### Case Report

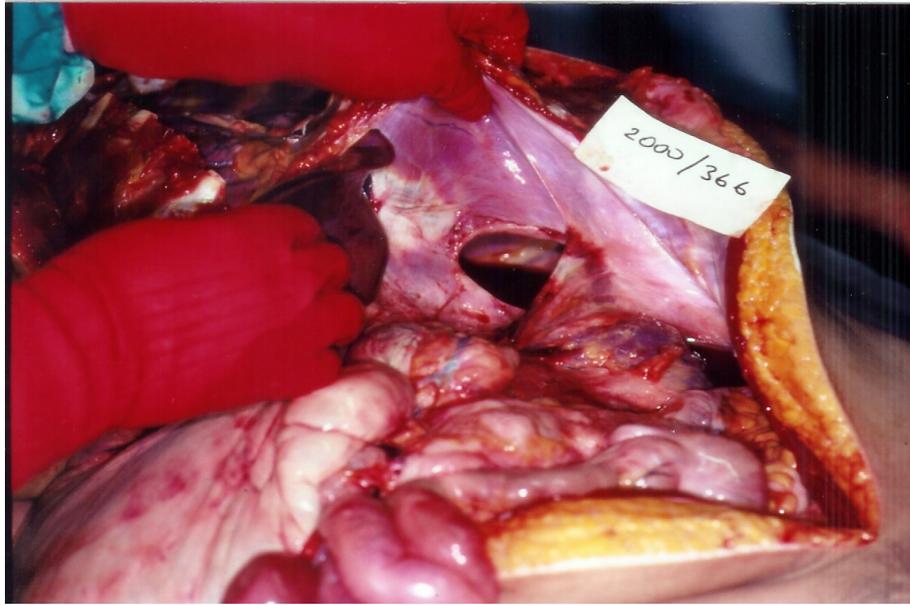
On studying the report of the physical examination of the corpse of a 16 year old female, it was recognized that according to the patient's history, of which the prosecutor attorney had been informed, the patient was taken to the doctor on feeling uneasy, urethra infection was diagnosed, her blood pressure fell to 40/0mmHg, and the patient died on the way to the hospital with the diagnosis of renal colic.

During the external physical examination carried out by the forensic medicine Institution, Adana branch of forensic medicine council, morgue department, nothing of significance was observed. But and when the thoracic cavity was opened, it was seen that the entire stomach and intestines were on the left side of the thoracic cavity. It was also noted that the left lung lobe of the appeared atelectatic (left 180 g, right 300 g), the stomach and intestines were drawn to the abdominal cavity; the heart when taken out was performing normally, and the mediastinum was pushed to the left. No other special observations were made during autopsy. In the postmortem histopathological evaluation there was no outstanding morphological pathology; in the toxicological analysis, it was observed that no drugs, chemical substances, or alcohol were involved.

As a result of the procedures carried out, it was reported that the cause of death was Bochdalek hernia.



**Figure 1.** The appearance of organs passing through the defect in the diaphragm into the thoracic cavity upon opening the abdominal and thoracic cavities.



**Figure 2.** The appearance of the defective field in the diaphragm.

### Discussion

It is vital to perform an autopsy so that the cause and the mechanism of death can be explained and external factors such as the effect of a person, or persons can be identified. It has been argued that the findings to be obtained from judicial inquiry, physical examination, and autopsy are of crucial value. After all these procedures, by comparison of antemortem and postmortem findings, the diagnosis and the treatment methods can be checked (2,3,6).

In a research carried out by department, the ratio of sudden unexpected mortality to overall mortality was found to be 8.2% (2,4). In another research conducted by the Istanbul Forensic medicine Institution, Morgue Department, this ratio was 23.01%, and in a research by Ege University such deaths make up 34% of all deaths (5,3).

It has been stated that Bochdalek hernia, the most common diaphragmatic hernia among newborns, may sometimes be fatal results due to respiratory problems, cyanosis, asphyxia, and may result in high mortality rates even after surgical treatment (11,12). Furthermore, it has been stated that this type of hernia might be mistaken for dextrocardia since the mediastinum is pushed to the opposite side and cyanosis develops in the clinical picture (13-15).

Although it is commonly diagnosed early and the necessary treatment is provided, or sometimes the patient dies in this early stage, it is rarely possible, as can be seen from the presented case and the previous case, to come across this disease in the late stage (10-18).

The complications of Bochdalek hernia, some of which are strangulation, ischemic necrosis in the small and large intestines, perforation, gastric gangrene, infarction of the spleen, fistula, obstructive hepatitis, acute respiratory deficiency, hypoxia, shock are life-threatening. It is known that the most dangerous complication is strangulation of the hernia (9,10,18).

It is known that the diagnosis of Bochdalek hernia is achieved through radiological imaging methods (Chest X-ray and CT). In the radiographs it has been frequently observed that there are intestinal coils full of gas in the left hemithorax, the lungs are atelectatic with decreased volume, the heart and mediastinum might be pushed to the left (8,9,14,16).

In both our cases (4) it has been identified, in accordance with the literature, that the organs in the abdominal cavity resided in the left thoracic cavity, the mediastinum was pushed to left, and the left lung was atelectatic in appearance.

It is known that after the diagnosis in the adult, surgical treatment is of great value prior to the emergence of the complications. It is argued that, in the later years of life, the symptoms of the disease may vary depending on the seriousness of the defect and may arise after coughing, pain, pregnancy, giving birth, physical effort, sexual intercourse, or post-trauma as well (7,16-19).

It is stated that the clinical picture observed in the newborn is different from that of the adult, and it is also observed that patients without any findings related to pulmonary disease might suffer from chest pain and gastro-intestinal complaints, and consequently receive the wrong treatment due to the wrong diagnosis (4,10,14).

In various sources, the attention has been drawn to the improper evaluation of the symptoms of such case, fatal results following incorrect diagnose have been reported (11,16,18).

It has been stated that as the defect is surrounded by a pouch, it allows the patient to survive longer, and the complications emerge later, the spleen prevents the organs in the abdominal cavity from moving toward the thorax, the increased pressure in the abdominal cavity leads to acute herniation (7,9,16,17,19).

From the findings we have obtained from various sources and from the case we are dealing with it can be seen that patients might see a doctor due to complaints related to the abdomen and the chest without having any lung problems and, consequently, might receive the wrong treatment on account of the wrong diagnosis which can result in death (4,11-13,15,18).

In the previous case (4) presented by our department as well as in this case, it has been learned that the patients had histories of stomachache, they were kept under observation for some time, and the cases were skipped over. It can be said that in these cases, some mistakes related to choosing the methods of examination and diagnosis, for which the doctor is responsible, have been made.

If doctors would be more thorough in their approaches regarding to their patients with non-specific complaints, they might diagnose late Bochdalek hernia cases and help them to survive by surgical treatment.

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