



Traumatic Pneumorrhachis: A Case Report

Travmatik Pnömoraji: Olgu Sunumu

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ABSTRACT

Pneumorrhachis, defined as the presence of air in the spinal canal, is a rare clinical condition. In this article, we aimed to present a patient with significant head trauma who fell from a height and was diagnosed with pneumorrhachis. A 52-year-old male patient was brought to our emergency department by ambulance due to falling from the stairs while picking grapes at a height of 3 meters. The patient had a subarachnoidal hemorrhage, subdural hemorrhage, pneumocephalus, and fractures in the frontal, temporal, and parietal bones. Air densities were detected in the cervical spinal canal. Traumatic pneumorrhachis is essential as an indicator of accompanying severe injury.

Keywords: Intraspinal air, pneumorrhachis, skull fracture

ÖZET

Spinal kanal içerisinde hava bulunması olarak tanımlanan pnömoraji nadir görülen bir klinik durumdur. Bu yazıda yüksekte düşen majör kafa travması olan ve pnömoraji tespit edilen bir hasta sunmayı amaçladık. 52 yaşında erkek hasta 3 metre yüksekte üzüm toplarken merdivenden düşme nedeniyle ambulans ile acil servisimize getirildi. Hastada subaraknoidal kanama, subdural kanama, pnömoşefali ve frontal, temporal ve pariyetal kemikte kırık vardı. Servikal spinal kanalda hava dansiteleri tespit edildi. Travmatik pnömoraji eşlik eden ciddi yaralanması bir göstergesi olması açısından önemlidir.

Anahtar Kelimeler: İntraspinal hava, kafatası kırığı, pnömoraji

INTRODUCTION

Pneumorrhachis (PR) was first reported by Gordon and Hardman (1) as the presence of air in the cervical spine in a trauma patient with multiple skull fractures and took its name in 1987 (2). PR is a rare and specific condition that occurs for different reasons and with other possible entry routes. PR occurs for various reasons, especially traumatic and iatrogenic, and is a rare imaging finding. PR can be classified as intradural (subdural or subarachnoid) and extradural (intraspinal, epidural). Although extradural PR is generally harmless, intradural PR is often associated with severe complications (3,4). In this article, we presented a case of pneumorrhachis, which is an extremely rare complication of trauma.

CASE REPORT

A 52-year-old male patient was brought to our emergency

department by ambulance due to falling from the stairs while picking grapes at a height of 3 meters. When paramedics found the patient at the scene of the accident, he was in a comatose state. When the patient arrived at the emergency department, he was unconscious, his Glasgow coma scale was 6 (eye: 1, verbal: 2, motor: 3), and there was scalp laceration and otorrhagia in the left ear. The patient was intubated immediately. Vital signs were arterial blood pressure 110/60 mmHg, pulse 144/min, and oxygen saturation 94%. The patient underwent tomography of the head, spine, chest, abdomen, and pelvis by the trauma protocol. Subarachnoidal hemorrhage, subdural hemorrhage in the right pariteofrontal region, and pneumocephaly were detected in the patient. Additionally, there was a comminuted displaced fracture in the right frontal, temporal, and parietal bones (Figure 1). There were air densities in the cervical spinal canal (Figure 2).

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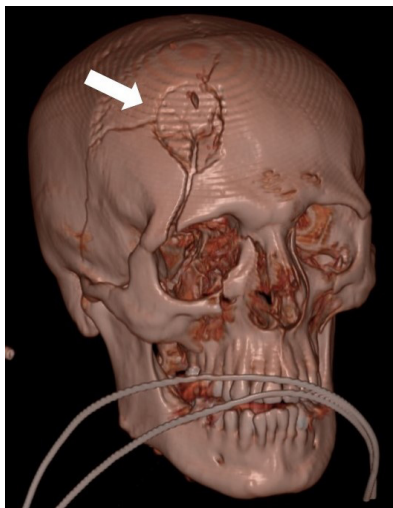


Figure 1. Volume-rendered image shows fractures of the frontotemporoparietal bones (arrow).

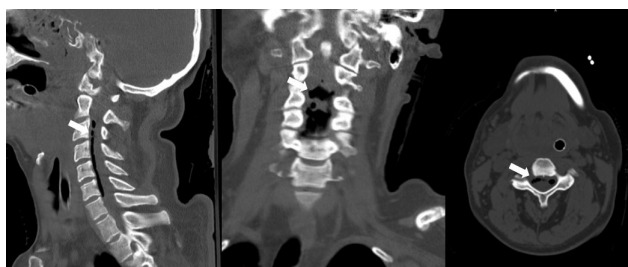


Figure 2. Computed Tomography (CT) scan of cervical pneumorrhachis-sagittal, coronary, and axial view. The white arrows point to the intraspinal air.

There was no pneumothorax, pneumomediastinum, or rib fracture. No pathology was detected in other systems. The patient was admitted to the neurosurgical intensive care unit. In the control tomography taken three days later, the air in the spinal canal had disappeared. However, the patient died on the 22nd day of hospitalization. Due to the patient's unconsciousness, written informed consent was obtained from the patient's family member.

DISCUSSION

Causes of PR are generally classified as iatrogenic, non-traumatic, and traumatic. Iatrogenic PR may occur during surgical interventions, anesthesia, and as a result of diagnostic examinations. Examples of non-traumatic PR reasons: Conditions such as malignancy, severe cough due to bronchial asthma or acute bronchitis, cardiopulmonary resuscitation, airway obstruction due to foreign body aspiration, physical exertion, use of ecstasy or marijuana, and prolonged and severe vomiting due to diabetic ketoacidosis may be given (5–7).

Traumatic PR is very rare and may occur as a result of isolated head trauma, cervical, thoracic, abdominal, and pelvic injuries, or spinal trauma. Traumatic PR is usually self-limiting and does not require treatment. However,

rapid recognition and distinction between epidural and subarachnoid is critical. Although the presence of subarachnoid air is an indicator of underlying severe damage, it may be complicated by tension pneumocephalus or meningitis. Epidural/extradural type traumatic PR is primarily benign. PR, which shows the severity of the trauma, is important because it emphasizes the need for subsequent comprehensive and systemic evaluation (5,6,8). First of all, the diagnosis of PR, which is a radiographic rather than clinical diagnosis, can be made with plain radiography and computed tomography. The primary diagnostic tool of choice for PR is computed tomography (CT). but it may not distinguish between intra- and extradural PR. However, subarachnoid PR located more centrally within the canal than normal anatomy may be considered extradural PR in the presence of corner or peripherally collected air. Magnetic resonance imaging or intrathecal contrast-enhanced CT can distinguish intradural air from extradural air (3,9,10). PR, in our case, was extradural because it was peripherally located and disappeared quickly. Traumatic PR does not require any special treatment other than treating the underlying injury. PR usually disappears with resorption of intra-spinal air within a few days (10). In our case, cervical intraspinal air disappeared in the tomography taken three days later.

Conclusion

Traumatic PR is crucial as it is an indicator of severe injury accompanying it. It is necessary to be skeptical about skull base fractures in patients with PR. The emergency physician should focus on treating the underlying pathology in traumatic PR, and PR usually disappears on its own.

Informed Consent: Due to the patient's unconsciousness, written informed consent was obtained from the patient's family member.

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