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Traumatic Pneumorrhachis in a Child

Case Report

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Abstract: Traumatic pneumorrhachis (air within the spinal canal) is a very rare entity and rarer in the pediatric population. We report a 7-year-old polytrauma patient with subarachnoid pneumorrhachis and discuss the causes, mechanism, and implications of this condition.

Key Words: pneumorrhachis, polytrauma, spine

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Free air surrounding the dura mater spinalis is an uncommon phenomenon that was primarily reported by Gordon and Hardman.[1] The term *pneumorrhachis* (PR) itself was first coined 10 years later by Newbold and coworkers.[2] Pneumorrhachis can be caused by many different etiologies. Most causes are traumatic and iatrogenic. Although recognized in the adult population and documented in the literature, pneumorrhachis is very rare in children.[3]

In this report, we present the case of a 7-year-old boy with traumatic PR.

CASE

A 7-year-old boy was brought to the emergency department after having been hit by a car. His systolic blood pressure was 70 mm Hg with a pulse of 160 beats per minute. His Glasgow Coma Scale score was 11. His pupils were equal, round, and reactive to light, and corneal and gag reflexes were intact bilaterally. He had signs of cranial and torso injury with subcutaneous emphysema on his neck and absence of breath sounds on his right chest. There was no external evidence of abdominal trauma. There are not any historical features or predictors that may be helpful in suspecting PR. Blood transfusion was initiated, and he was intubated with rapid sequence intubation protocol, and a chest tube was placed on his right hemithorax. His focused abdominal sonography in trauma revealed perihepatic free fluid. Cranial computed tomography (CT) showed fractures on sphenoid and right parietal bones with pneumocephalus (Fig. 1). Vertebral CT showed subarachnoid PR (Fig. 2).

While he was being transferred to the operating room, he became pulseless; attempts to resuscitation were unsuccessful, and he died as a result of polytrauma.

DISCUSSION

Air within the spinal canal is a very rare condition. The entity was first described by Gordon[1] in 1977, and he called it *pneumomyelogram*. The term of pneumorrhachis was first used by Newbold and colleagues[2] in 1987 in a trauma patient to define air in the vertebral column at the cervical level. Aerorachia, intraspinal pneumocell, pneumosaccus, and epidural emphysema are the other names of this entity.[4]

It was anatomically classified as intradural (subdural or subarachnoid) and extradural (epidural), whereas it was pathophysiologically classified as nontraumatic, traumatic, and iatrogenic.[4] The occurrence of pneumorrhachis secondary to trauma is extremely rare. The demonstration of air in the subarachnoid space in a trauma patient as opposed to epidural air should always alert the trauma specialist.[4] Traumatic subarachnoid pneumorrhachis is almost always secondary to major trauma and is a marker of severe injury. Motor-vehicle crashes and falls from height are the most commonly reported causes. Air entering the subarachnoid space[4,5] easily travels cephalad to the cranium. Therefore, subarachnoid pneumorrhachis is almost always associated with pneumocephalus.[4]

Although recognized in the adult population and documented in the literature, traumatic pneumorrhachis is very rare in children. Subarachnoid space traumatic PR in children has been reported previously in association with traumatic pneumothorax.[3] The clinical diagnosis of PR is nearly impossible especially in the setting of trauma. Thus, the diagnosis is mainly made incidentally by plain radiographs and CT scans. Nevertheless, on CT, intradural and extradural PR may be difficult to differentiate.[3]

Pneumorrhachis in itself is usually asymptomatic and reabsorbs spontaneously and completely with the air being passed directly into the blood in several days without recurrence. Therefore, patients with pneumorrhachis are typically managed conservatively.[4,5]

FIGURE 1. Air in the subarachnoid space.

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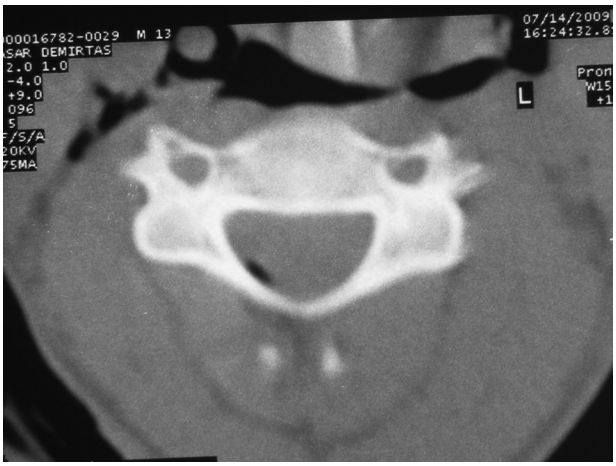

FIGURE 2. Air in the spinal channel.

On the other hand, in the presence of subarachnoid PR, the trauma surgeon should be alerted to the possible presence of a significant injury in the spinal column[6] or skull.[7]

CONCLUSIONS

Traumatic PR is a very rare but important entity in children that all trauma specialists must be aware of the presence of subarachnoid air, being a marker of a severe underlying injury.

REFERENCES

1. Gordon IJ, Hardman DR. The traumatic pneumomyelogram. A previously undescribed entity. *Neuroradiology*. 1977;13:107–108.
2. Newbold RG, Wiener MD, Volger JB III, et al. Traumatic pneumorrhachis. *Am J Roentgenol*. 1987;148:615–616.
3. Gibikote S, Wray A, Fink AM. Pneumorrhachis secondary to traumatic pneumomediastinum in a child. *Pediatr Radiol*. 2006;36:711–713.
4. Goh BK, Yeo AW. Traumatic pneumorrhachis. *J Trauma*. 2005;58: 875–879.
5. Lin LC, Liao YM, Yang RC. Pneumorrhachis following lumbar puncture: a case report. *Kaohsiung J Med Sci*. 2006;22:39–43.
6. Gertzbein SD. Traumatic pneumomyelography: a marker of spinal column injury in the face of innocuous spinal fractures—two case reports. *Spine*. 1998;23:1283–1286.
7. Jarolimek AM, Harris JH. Pneumorrhachis. *Emerg Radiol*. 1999;6: 146–148.