

IMAGES IN EMERGENCY MEDICINE

Neurology

Middle-aged man with conscious disturbance and left hemiparesis

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1 | PATIENT PRESENTATION

A 54-year-old man presented to the emergency department at 2:29 on November 17, 2021, because of impaired consciousness since 21:00 on November 16, 2021. On arrival, his temperature was 36°C (96.8°F), his pulse rate was 76/min, and his blood pressure was 135/90 mm Hg. His Glasgow Coma Scale score was E1V3M4 and neurological examination revealed newly developed left hemiparesis. The laboratory blood results showed a glucose level of 180 mg/dL, a platelet count of 230,000/ μ L, and an international normalized ratio of 1.48. There was no electrolyte imbalance. An emergency neurological consultation was obtained owing to the suspicion of acute right middle cerebral artery infarction and emergency computed tomography of the brain was performed (Figure 1).

A thorough medical history mentioned that patient had undergone craniotomy due to cerebral hemorrhage 6 months ago. A scheduled radionuclide cisternogram had been arranged on November 15, 2021, in other hospital for evaluation of his chronic headache, and it was reported that several attempts in performing lumbar puncture resulted in cerebrospinal fluid leakage.

2 | DIAGNOSIS

2.1 | Paradoxical cerebral herniation (sinking skin flap syndrome)

A paradoxical cerebral herniation, also known as sinking skin flap syndrome, is a herniation of a brain that has been surgically decompressed, while the forces of atmospheric pressure or gravity overwhelm the intracranial pressure.¹

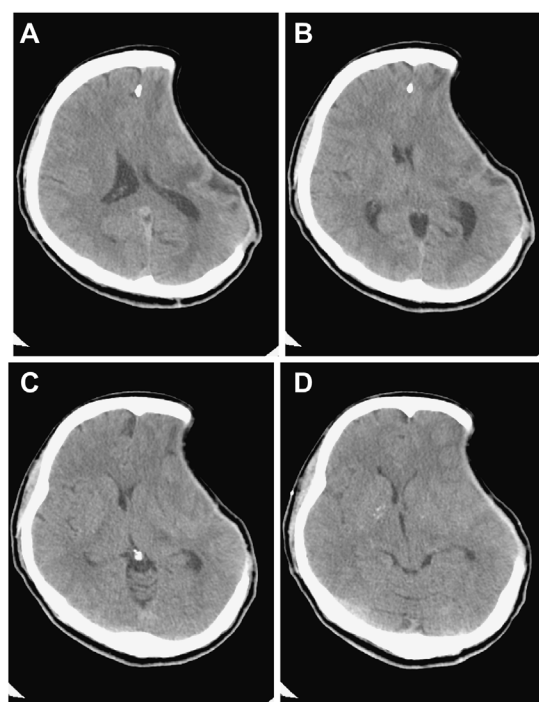


FIGURE 1 Noncontrast-enhanced CT (computed tomography angiography) of the brain on November 17, 2021, (A-D) shows a sunken skin flap with a herniation of the brain away from the craniectomy defect, resulting in a midline shift of \approx 1 cm to the right side with a decreased size of both lateral ventricles and the third ventricle

The symptoms vary from mild symptoms due to intracranial hypotension to severe neurological deterioration.² Although the neurological exam findings might be compatible with stroke syndrome,

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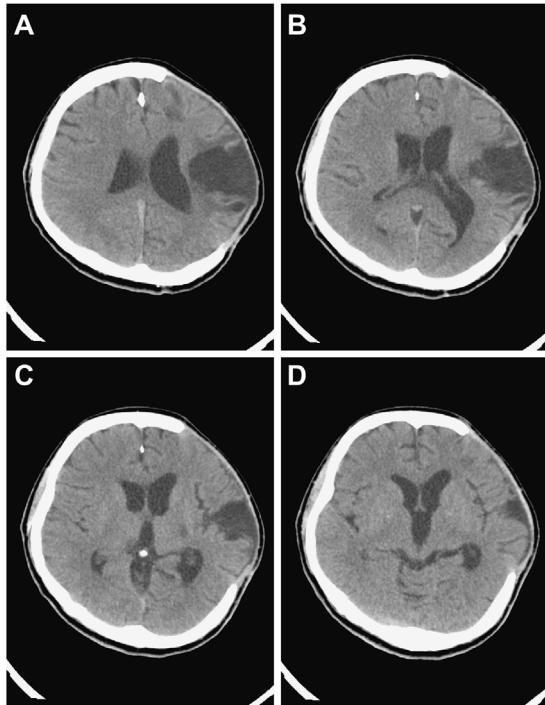


FIGURE 2 Follow-up brain CT (computed tomography angiography) on November 26, 2021, (A-D) reveals the resolution of the paradoxical hernia. Postoperative changes with bone defects and old cerebrovascular accidents with low-density changes were also noted in the right frontotemporoparietal area

it is crucial to differentiate by thorough history taking, including the disease course and recent medical interventions, and physical examination over the scalp to identify a sunken brain.³ Therapy included early rehydration, emergency surgical consultation with cranioplasty,² and blood patch injection once the site of the epidural leak was identified.⁴ In contrast, procedures that can lower increased intracranial pressure, such as mannitol prescription,¹ cerebrospinal fluid

drainage,⁵ hyperventilation, and upright positioning,⁶ can exacerbate a paradoxical hernia.

A consultation with a neurosurgeon was arranged. The patient was placed in the Trendelenburg position and aggressively hydrated with 2000 mL isotonic saline per day. Follow-up brain computed tomography on November 26, 2021, showed the resolution of the brain herniation (Figure 2). Ambulation was performed gradually on November 28, 2021. He was discharged in stable condition a few days later.

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