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## Woman With Headache and Nausea

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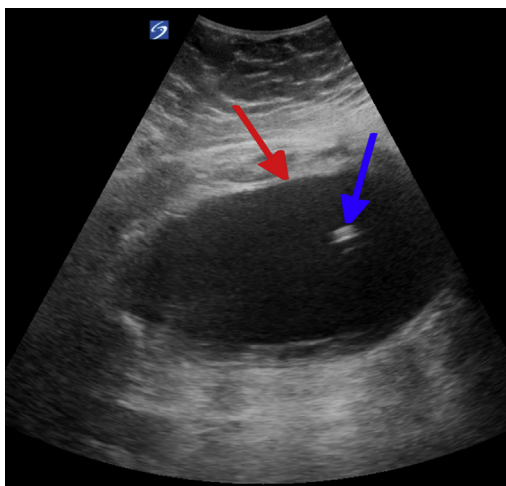
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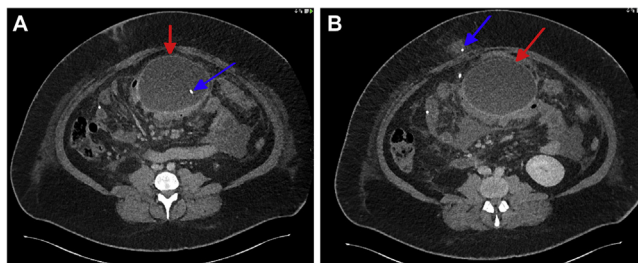
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**Figure 1.** Point-of-care ultrasound image of encapsulated fluid collection (red arrow) with the ventriculoperitoneal shunt in situ (blue arrow).



**Figure 2.** CT brain images showed no signs of hydrocephalus (blue arrow) and demonstrated the extracranial drain path (red arrow).



**Figure 3.** Left and right panels, cerebrospinal fluid pseudocyst (red arrow on both panels) with the intraperitoneal shunt tip (blue arrow on the left panel) and the extraperitoneal infected shunt surrounded with indurated tissue (blue arrow on the right panel).

[Ann Emerg Med. 2022;79:e109-e110.]

A 32-year-old woman with a medical history of obesity, spina bifida, and hydrocephalus (treated with a ventriculoperitoneal shunt) visited the emergency department with headache, neck pain, and nausea. On presentation, she had a temperature of 36.2 °C, a pulse rate of 122/min, a blood pressure of 121/79 mm Hg, and an oxygen saturation of 99%. Her abdomen was tender, with a hard-elastic mass palpable in her epigastric region. Neurological examination was unremarkable. However, laboratory tests revealed significantly raised C-reactive protein levels (400 mg/L) and a leukocytosis ( $24.9 \times 10^9/L$ ). In addition, point-of-care ultrasound demonstrated an encapsulated abdominal fluid collection with the ventriculoperitoneal drain in situ (Figure 1). Subsequently, a brain computed tomography (CT) scan showed no signs of hydrocephalus (Figure 2), and contrast-enhanced CT-abdomen demonstrated an intra-abdominal pseudocyst filled with fluid with a density comparable to liquor around the ventriculoperitoneal shunt (Figure 3). She was admitted for immediate shunt externalization, (ultrasound-guided) drainage of the pseudocyst, and treatment with broad-spectrum intravenous antibiotics, after which she fully recovered.

*For the diagnosis and teaching points, see page e110.*

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*(continued from p. e109)***DIAGNOSIS:**

*Cerebrospinal fluid pseudocyst formation.* Cerebrospinal fluid pseudocyst formation is a rare complication after ventriculoperitoneal shunt placement for hydrocephalus (1% to 5%).<sup>1-3</sup> Patients can present with various symptoms associated with the pseudocyst (abdominal pain and distention), infection (fever and raised C-reactive protein levels), and/or increased intracranial pressure (headache and vomiting).<sup>2,3</sup> Although contrast-enhanced abdominal CT-scan is the gold standard for assessing pseudocysts,<sup>2</sup> point-of-care ultrasound can be a valuable tool in the emergency department to expedite diagnosis.<sup>1,4</sup>

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