



## Distended abdomen due to a pseudocyst around a ventriculoperitoneal shunt

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**Summary** Described herein is a case of distended abdomen in a 4-year-old boy with a ventriculoperitoneal (VP) shunt due to bilateral intraventricular hemorrhage following premature birth. Physical examination and laboratory tests revealed tenderness in the lower quadrants, with mild leukocytosis and normal C-reactive protein levels. X-ray demonstrated an intact VP shunt catheter but cranial displacement of the large intestine. Ultrasonography confirmed a large pseudocyst around the VP shunt, with extension from the symphysis to the sternum. The distal part of the VP shunt was surgically revised and 2.5 l of cerebrospinal fluid were evacuated. The boy made a full clinical recovery. Conventional X-rays, routinely used to confirm or exclude VP shunt continuity, may provide important clues regarding to the etiology of VP shunt dysfunction.

**Keywords** Prematurity · Ventriculo-peritoneal shunt · Abdomen · Cyst · Ultrasonography

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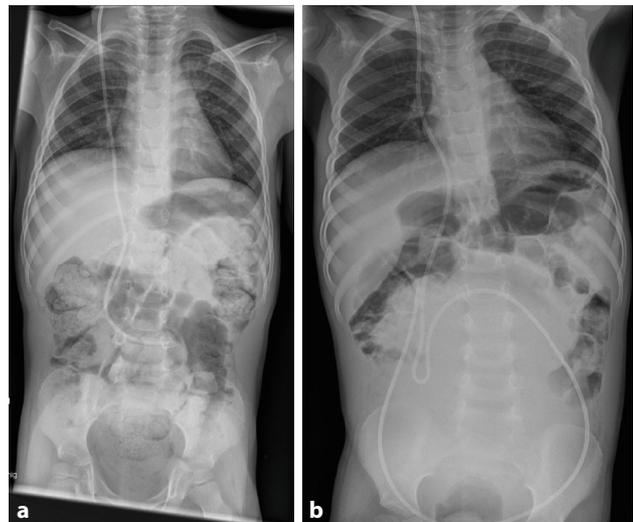
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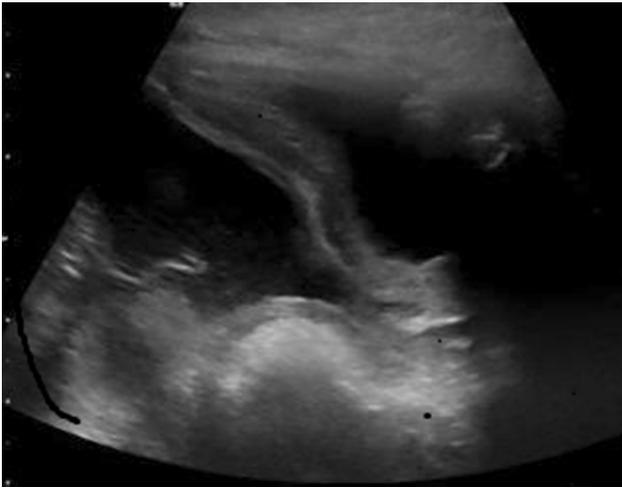
### Case report

This case report describes a 4-year-old boy with a history of bilateral intraventricular hemorrhage requiring the insertion of a permanent ventriculoperitoneal (VP) shunt after being born as premature infant after 28 weeks of gestation. Upon admission to our hospital, the parents reported recurrent vomiting, but no fever or diarrhea.

On physical examination he looked unwell, and on palpation the abdomen was distended and demonstrated tenderness in both lower quadrants. The VP shunt could be easily palpated, with no signs of discontinuation. Laboratory analysis showed mild leukocytosis but C-reactive protein within the reference range.



**Fig. 1** **a** X-ray demonstrating cranial displacement of the large intestine, **b** X-ray demonstrating regular intra-abdominal gas pattern



**Fig. 2** Ultra-sonography showing large intra-abdominal pseudocyst

To rule out VP shunt disconnection, an X-ray study was performed demonstrating an intact VP shunt catheter but cranial displacement of the large intestine (Fig. 1a), most notably when compared to a previous examination (Fig. 1b; with a different VP shunt).

On ultrasonography, a large pseudocyst around the VP shunt was confirmed, with extension from the symphysis to the sternum (Fig. 2). Subsequently, the distal part of the VP shunt was surgically revised and 2.5 l of cerebrospinal fluid were evacuated. After surgical revision, the boy made a full clinical recovery.

We conclude that conventional X-rays—although routinely used to confirm or exclude VP shunt continuity—may provide important clues with regard to the etiology of VP shunt dysfunction [1, 2].

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**Conflict of interest** S. Meyer, S. Nemat, S. Linsler, J. Bay, M. Zemlin, and M. Poryo declare that they have no competing interests.

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## References

1. Basilotta Márquez YNI, Mengide JP, Liñares JM, Saenz A, Argañaraz R, Mantese B. Abdominal complications in patients with a ventriculoperitoneal shunt: proposal for management recommendations from a single pediatric tertiary center. *Childs Nerv Syst.* 2021; <https://doi.org/10.1007/s00381-021-05121-y>.
2. Guest BJ, Merjanian MH, Chiu EF, Canders CP. Abdominal cerebrospinal fluid pseudocyst diagnosed with point-of-care ultrasound. *Emerg Med.* 2019;3(1):43–6. <https://doi.org/10.5811/cpcem.2018.11.40780>.

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