

## CASE REPORT

# Transverse sinus obstruction caused by extradural supra-infratentorial hydatid cyst: A case report and literature review

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**Abstract**

Approximately 1–3% of cases of hydatid disease involve the central nervous system (CNS). This study aims to report an extremely rare case of supra-infratentorially located epidural hydatid cyst with transverse venous sinus obstruction which presented with chronic cerebral vein thrombosis (CVT) signs and symptoms.

**KEYWORDS**

echinococcosis, epidural cyst, extradural, hydatid

## 1 | INTRODUCTION

A parasitic infestation caused by the larval stage of the tapeworm *Echinococcus* results in hydatid disease. There are two main types of hydatid disease caused by *Echinococcus granulosus* and *Echinococcus multilocularis*, which cause cystic echinococcosis and alveolar echinococcosis, respectively.<sup>1</sup> Tapeworm eggs are excreted in the feces of definitive hosts (usually dogs or related species). Humans can be infected by ingestion of food, water, soil, or direct contact with infected animals. After progression of the infection and hydatid cyst formation, cysts tend to form in the liver and lungs (70–90%), though they can also develop in the bones, kidneys, muscles, spleen, and central nervous system (10–30%).<sup>2</sup> In some regions of the world, including Central Europe, the Mediterranean countries, the Middle East, South America, Australia, New Zealand,

and South Africa, *Echinococcus granulosus* is endemic.<sup>3</sup> Approximately 1–3% of cases of hydatid disease involve the central nervous system (CNS).<sup>1</sup> This study aims to report an extremely rare case of supra-infratentorially located epidural hydatid cyst with transverse venous sinus obstruction which presented with chronic cerebral vein thrombosis (CVT) signs and symptoms.

## 2 | CASE REPORT

A 35-year-old woman with a history of previous hepatic hydatid cyst presented to the clinic suffering from bursting headache and blurred vision. She had suffered from headache for the past 12 months, which was in the occipito-parietal region and became aggravated when she performed Valsalva maneuvers or was exposed to light.

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The headache became unbearable and intolerable in last 3 months and visual disturbances superimposed. In the last 3 months, the headache was exacerbated with coughing and sneezing. She had hepatic surgery due confirmed hydatidosis 3 years ago and discontinued Albendazole 6 months after surgery. Physical examination revealed bilateral blurred optic discs. A brain MRI showed an epidural lentiform lesion on the torcula with multiple septations extending from right to left and from supratentorial to infratentorial regions. The lesion showed a ring enhancement with contrast administration (Figure 1). Brain MRV demonstrated right transverse sinus obstruction with patent superior sagittal and left transverse sinuses

(Figure 2). Laboratory studies including ESR,CRP, serological laboratory studies, pulmonary CT scan, and cardiac evaluation were unremarkable. Due to previous history of hydatid disease, extradural hydatid cyst was confirmed for primary diagnosis. We performed a craniectomy surgery in the prone position. Midline supratentorial and infratentorial craniectomy was done with extension to the left and right sides with a high speed drill. Due to vascular anatomy of the region and multiple bony erosions, craniotomy was not possible and cyst puncture was inevitable (Figure 3). Cyst was drained, and its margins were removed completely to see both transverse and superior sagittal sinuses. Surgical field was irrigated entirely with

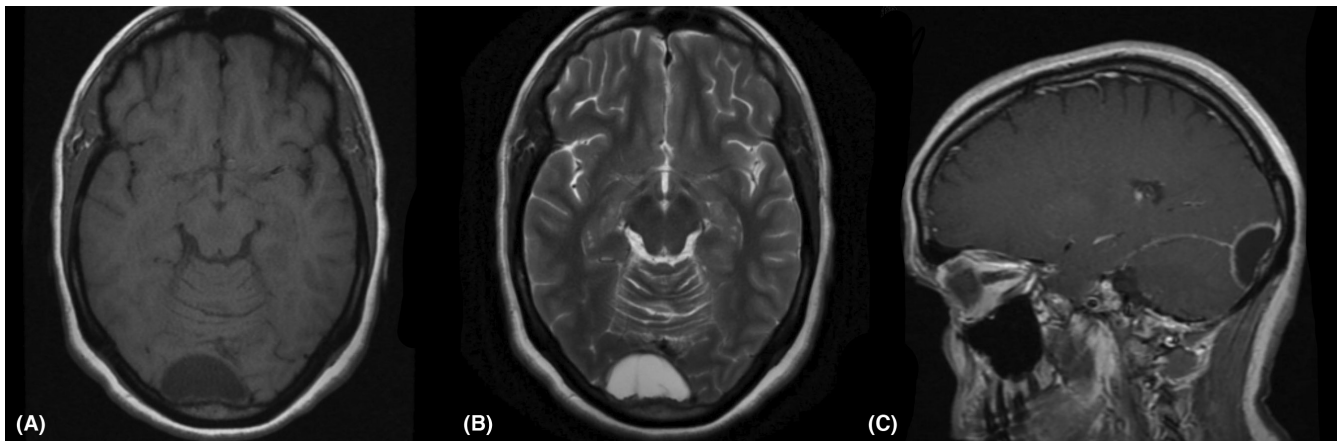


FIGURE 1 (A) T1-weighted axial MRI, (B) T2-weighted axial MRI, and (C) T1+contrast sagittal MRI.



FIGURE 2 Brain MRV showing right transverse sinus obstruction.

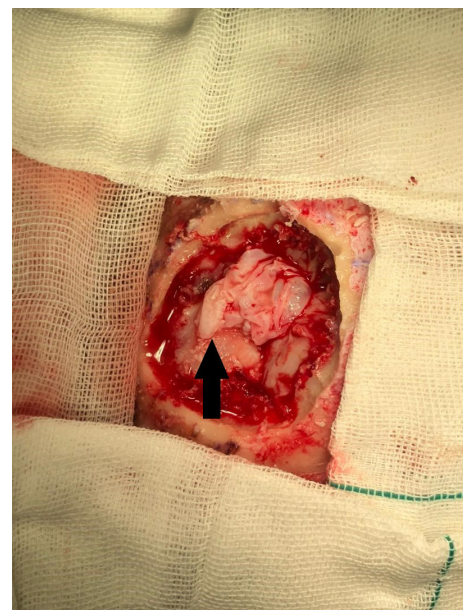


FIGURE 3 Intra-operative image of the lesion after craniectomy. The arrow shows the cyst wall.



FIGURE 4 Postoperative CT-scan of the patient.

hypertonic saline. Cranioplasty using autograft bone from the external table of the occipito-parietal region was performed. Postoperation imaging and clinical status were unremarkable, and visual complaints resolved in weeks. Postoperative CT scan shown in Figure 4. Intravenous heparin followed by warfarin was administered because of thrombosis in transverse venous sinus. The patient also received anti-helmetic medication after surgery after infectious medicine service consultation.

### 3 | DISCUSSION

A hydatid cyst is a parasitic infection of significant importance, especially in areas where it is endemic. It is possible for hydatid cysts to form anywhere in the human body as a result of an infection with *Tenia echinococcus*.<sup>2</sup> There are only 0.5–2% of them that are found in the skeleton, and of these, 3–4% are found in the skull.<sup>2</sup> The epidural space is a rare location for hydatid cysts of the central nervous system, which could be related to physiologic spread of larvae in territory of internal carotid artery and middle cerebral artery. In 1–3 percent of patients diagnosed with hydatid disease, there is involvement of the central nervous system.<sup>4</sup> Also midline supratentorial and infratentorial cysts extending to both sides of the right and left are extremely rare. In the literature, we are aware that there have been three cases of infra-supra tentorial hydatid cysts reported so far.<sup>5,6,7</sup> The details of these previously reported cases are shown in Table 1.

Hydatid cyst resection without cystic rupture is an important technical point in the surgical removal of

TABLE 1 Supra-infratentorial extradural hydatid cysts in the literature.

Author	Year	Age	Sex	Cyst type	Treatment
Beskonakli et al. <sup>5</sup>	1996	15	Female	Single	Surgery
Gazzaz et al. <sup>6</sup>	2000	5	Female	Single	Surgery
Okten et al. <sup>7</sup>	2006	23	Male	Single	Surgery
Current study	2022	35	Female	Single	Surgery

these lesions. The Dowling-Orlando technique is the classic approach for this procedure. In our case, due to specific anatomy of the affected region and bone partial bone destruction of the overlying skull, cyst wall puncture was inevitable during surgery. In one of the previous reported cases of the same location, the cyst wall could be seen after scalp incision due to occipital bone destruction. In that circumstances, needle decompression of the cyst could be performed before craniectomy/craniotomy. The early needle decompression facilitated Dowling-Orlando technique achievement in the discussed case.<sup>7</sup>

Presentation of chronic cerebral vein thrombosis symptoms due to right transverse venous sinus obstruction in this case is a novel case story which has not been reported in the previous literature. In cases with known history of hydatid cysts or laboratory findings in favor of hydatidosis, epidural cysts should be considered as one of the possible differential diagnosis.

### 4 | CONCLUSION

Extradural hydatid cyst is a rare intracranial pathology. In this article, we reported this rare pathology in an unusual location, with a novel manifestation of transverse sinus obstruction.

#### AUTHOR CONTRIBUTIONS

**Mohamad Namvar:** Conceptualization; methodology; visualization; writing – original draft; writing – review and editing. **Pedram Sedaghat:** Conceptualization; methodology; visualization; writing – original draft. **Arad Iranmehr:** Conceptualization; investigation; methodology; supervision; validation; visualization; writing – original draft; writing – review and editing.

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None.

#### CONFLICT OF INTEREST STATEMENT

The authors report there are no competing interests to declare.

## DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

## CONSENT

The authors have obtained written informed consent to publish the details from the affected individual.

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