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Hydatid Cysts in Segment I of the Liver: A Rare Surgical Challenge

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1. Abstract

1.1. Introduction and importance: Hydatid cysts of the liver are benign lesions with diverse clinical presentations that necessitate prompt and precise therapeutic management. Cysts located in segment I of the liver are rare and present significant challenges due to their anatomical proximity to critical vascular structures, such as the inferior vena cava and the right portal branch. These factors complicate surgical interventions, requiring specialized expertise.

1.2. Clinical presentation: A 53-year-old male presented with right hypochondrial pain and heaviness. Imaging revealed a 10 cm type IV hydatid cyst located in segment I, adjacent to the inferior cavernous vein and the right portal branch. The patient underwent a right subcostal approach, where intraoperative findings confirmed a large cyst occupying segment I with retropericardial extension. Cystotomy and drainage of the residual cavity were performed, and the postoperative course was uneventful.

1.3. Clinical discussion: Hydatid cysts in segment I are infrequent and challenging, often involving complex relationships with vital blood vessels. Advanced imaging techniques, such as CT and MRI, play a crucial role in assessing cyst size and vascular involvement, but surgical intervention remains the gold standard for large or complicated cases. Techniques like cystectomy or pericystectomy must be meticulously planned to avoid vascular complications. While albendazole can aid in preventing recurrence, it is inadequate as a sole treatment for large cysts.

1.4. Conclusion: Hydatid cysts in segment I of the liver are rare and require precise surgical management due to their proximity to major

vessels. Early diagnosis and careful surgical intervention are key to achieving favorable outcomes and minimizing complications.

2. Keywords: Hydatid cyst, liver, Segment I, Inferior vena cava, Vascular complication, Surgical management

3. Introduction

Hydatid cyst of the liver is a benign condition with diverse clinical manifestations requiring rapid and appropriate therapeutic management [1]. The size and evolution of intrahepatic localisations vary, but those in segment I of the liver are particularly rare and often associated with serious complications, notably vascular and biliary [2]. Because of its anatomical position close to the suprahepatic vascular crossroads and the inferior vena cava, Segment I makes surgical interventions complex and requires specialized expertise [3].

This work has been reported in line with the SCARE criteria [4].

4. Clinical Case

A 53-year-old man presented with right hypochondrium pain accompanied by a sensation of heaviness. Medical imaging revealed the presence of a type IV hydatid cyst, measuring 10 cm in diameter, situated in segment I, in close contact with the inferior cavernous vein and the right portal branch (Figure 1).

The patient underwent right subcostal surgery. Intraoperative exploration revealed an extensive hydatid cyst occupying segment I, with retropericardial development. A cystotomy was performed on a free protruding part of the cyst, with drainage of the residual cavity. The postoperative course was uneventful.



5. Clinical Discussion

Hydatid cysts in liver segment I are uncommon and challenging cases that demand specialized surgical expertise due to their critical location near major blood vessels. While advanced imaging techniques like CT and MRI are essential for accurate diagnosis and assessment of vascular relationships, particularly given the risk of inferior vena cava and hepatic vein invasion [5], surgical intervention remains the primary treatment approach for large or complicated cysts. The surgical technique must be

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carefully selected based on factors such as cyst size, location, and vascular involvement, with total cystectomy or pericystectomy requiring meticulous execution to prevent vascular complications [6]. Although albendazole is commonly used as supplementary therapy to prevent recurrence and manage inoperable cases, medical treatment alone is insufficient for large cysts causing mass effect or complications [7], making early diagnosis and precise surgical management crucial for optimal outcomes.

6. Conclusion

Hydatid cysts in segment I of the liver are rare and require specialized surgical expertise due to their proximity to major vessels. Early diagnosis and meticulous surgical management are crucial for successful outcomes with minimal complications

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8. Ethical approval

Ethical approval is not applicable/waived at our institution. Due to the specific nature of case reports, which involve detailed descriptions of observations and interventions that have already been conducted on patients, as opposed to prospective studies involving planned interventions, our institution does not require formal ethical approval for such cases. We recognize the importance of ethics in medical research and are fully committed to upholding ethical standards in our medical and research practices.

9. Patient consent

Written informed consent was obtained from the patient for the publication of this case report and its accompanying images. A copy of the written consent is available for the Editor-in-Chief of this journal to review upon request.

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