

## Hepatic cystic lesion in adult: a challenging diagnosis of undifferentiated primary embryonal sarcoma

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**SUMMARY:** Hepatic cystic lesion in adult: a challenging diagnosis of undifferentiated primary embryonal sarcoma.

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*Cystic lesions of the liver are common. Most of these represent benign simple cysts that generally require no intervention. The diagnosis of simple hepatic cysts is straightforward in the face of typical radiographic findings; however, diagnostic uncertainty, based solely on radiographic criteria alone, is not an uncommon clinical dilemma.*

*In this report, we present a case of a 47 old woman with a cystic liver lesion and acute epigastric pain. The patient had no previous history of oral contraceptive assumption or liver disease. A tender mass was palpable on the upper right quadrant of the abdomen.*

*The abdominal ultrasound (US) showed a cystic lesion with a possible hemorrhagic component on right liver lobe. Abdominal computed tomography (CT) and magnetic resonance (MR) revealed a complex cystic lesion with possible intracystic hemorrhage.*

*The patient was submitted to operation and resection; the final histologic diagnosis revealed a primary undifferentiated embryonal sarcoma of the liver.*

*She relapsed 24 months after a new hepatic resection and chemoembolization, she is alive at 29 months after first surgery.*

**RIASSUNTO:** Lesione cistica epatica in adulto: un caso di difficile diagnosi di sarcoma embrionale primitivo indifferenziato.

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*Le lesioni cistiche del fegato sono comuni. La maggior parte di esse rappresentano semplici cisti benigne che non richiedono alcun intervento. La diagnosi di cisti semplice si ottiene con la ecografia o la TC. Tuttavia, qualche volta vi è un'incertezza diagnostica che pone dilemmi clinici.*

*Riportiamo il caso clinico di una donna di 47 anni con una lesione cistica del fegato riscontrata dopo un violento dolore epigastrico. Non vi era storia di contraccettivi orali ed era apprezzabile una tumefazione dolente in ipocondrio destro.*

*L'ecografia, la TC e la RM hanno rilevato una lesione cistica complessa del fegato a contenuto emorragico.*

*La paziente è stata sottoposta a resezione epatica e l'esame istologico ha dimostrato trattarsi di sarcoma embrionale primitivo ed indifferenziato del fegato che è recivato dopo 24 mesi.*

*Sottoposta a nuova resezione e chemioembolizzazione, la paziente è viva a 29 mesi dal primo intervento chirurgico.*

KEY WORDS: Liver - Hepatic cyst - Sarcoma - Adults.  
Fegato - Cisti epatica - Sarcoma - Adulti.

### Introduction

Undifferentiated primary embryonal sarcoma (UES) is a rare mesenchymal malignant tumor that usually affects children, with high incidence between 6 and 10 years. Reported cases of UES in adults are rare, with dif-

ficulty in diagnosis and management. Resection remains the only potentially curative treatment, although multimodality therapy is often used (1-4).

### Case report

A 47 year old female was admitted with upper abdominal pain. She denied weight loss and history of hepatitis or other liver diseases. On examination, an epigastric mass was palpable. Laboratory tests, including hepatitis serology and tumor markers, were normal. She denied a history of drug abuse.

An abdominal US examination showed a large inhomogeneous lesion in the right lobe of the liver, initially considered as abscess. A CT scan confirmed the presence of the large mass with apparent in-

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tralesional necrosis and haemorrhage. A subsequent MR showed a 6 cm mass occupying the right lobe. On T1 weighted images, the lesion had a fluid-filled center, consistent with necrosis and/or haemorrhage, and a solid and irregular peripheral component. The peripheral aspect of the lesion enhanced after Gd-BOPTA but was slightly hypo-intense compared to the surrounding liver. Based on the imaging findings, a presumptive diagnosis of a complex liver adenoma was made (Fig. 1). A contrast-abdominal US suggested the same diagnosis. Chest radiography and esophagogastroduodenoscopy were normal.

The patient was subsequently taken to operation. Intraoperative US confirmed the presence of the 8 cm lesion involving hepatic segments 5, 6 and 7; there were no other lesions. We performed an anatomical right hepatectomy. The post-operative course was uneventful, and the patient was discharged on post-operative day 5.

The definitive pathological exam described an 8 cm cystic lesion with a thin and well defined capsule. The main part of the lesion consisted of necrotic tumor with haemorrhage. The tumor was comprised of mesenchymal elements with morphological and immunohistochemical staining compatible with myogenic differentiation; staining with anti-desmin HHF35 (smooth muscle antibody) was focally positive. The mitotic rate was high and there was marked cellular polymorphism (Fig. 2). The histopathological results allowed a definitive diagnosis of undifferentiated primary embryonal sarcoma of the liver.

To complete the staging work-up, a total body FDG-PET was obtained and was negative. Our oncologists recommended adjuvant systemic therapy, and the patient subsequently received 4 cycles of epirubicin and fosfamide. The patient relapsed twenty-four months after the first operation and was reoperated for liver recurrence; we performed left-lateral hepatectomy and the pathological report described the same UES.

After 4 fourth months, due to not respectable relapse, she underwent a trans-arterial chemo-embolization with epirubicin. She's alive, with disease, 29 months after the first resection.

## Discussion

UES of the liver is a rare aggressive neoplasm that most commonly affects children and young adults. Of the cases reported in literature, 88% are in patients younger than 15 and it is extremely uncommon in older age groups. The distribution is equal between male and female without racial predilection. The usual clinical manifestation is upper abdominal pain with palpable tender mass with weight loss and fever. The right lobe of the liver is more frequently involved (3-6).

UES was first described by Stocker in 1978; it's a primitive spindle cell tumor with poor prognosis and a median survival of less than one year from the time of diagnosis (7). Compared to UES, liver metastasis from an extrahepatic sarcoma is much more common and must be excluded as a diagnostic possibility with a thorough staging evaluation.

Liver function test and alfa-fetoprotein are generally normal. Radiological investigations of UES typically show a "large space occupying lesion" with mixed solid-cystic features. These tumors usually arise in the right lobe and are solitary. The haemorrhagic and necrotic components are common and likely result from dege-

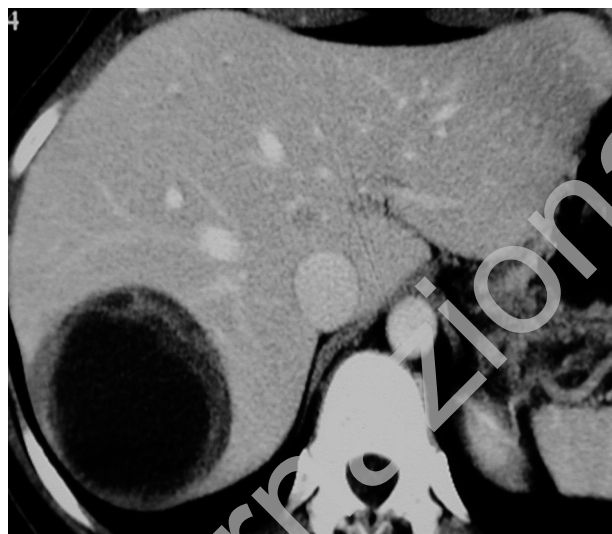


Fig. 1 - CT scan showing a well demarcated mass. The lesion had a fluid-filled center consistent with necrosis and/or haemorrhage, and a solid and irregular peripheral component.

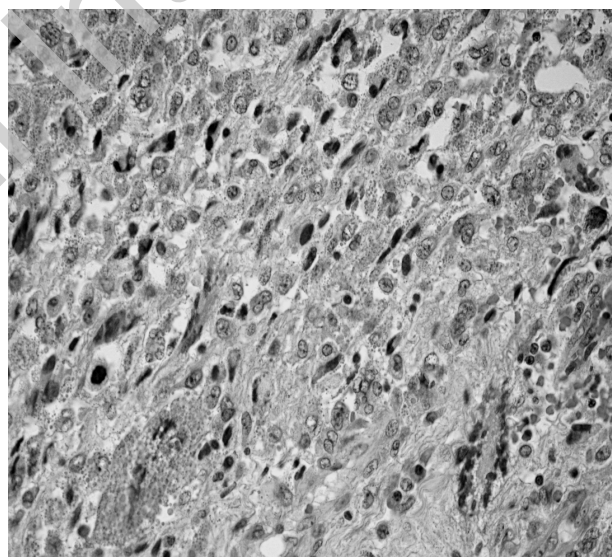


Fig. 2 - Histological features of UES: high number of mitoses.

neration due to the rapid growth (7-12). Imaging studies of UES readily show complex cystic lesions, easily distinguishing them from the more common simple hepatic cysts and alerting the clinician to the possibility of a neoplasm. However, the imaging findings are relatively non-specific and can potentially be confused for an abscess, a cystadenocarcinoma, or other primary liver tumor with central necrosis and intratumoral haemorrhage (adenoma, hepatocellular carcinoma, angiosarcoma, mesenchymal hamartoma). Regardless, the imaging findings clearly show a lesion that cannot be igno-

red and likely requires resection. CT scan shows a hypodense mass with well defined borders and hyperintense septations. Sometimes a pseudocapsule surrounding the tumor may be detected by an enhancing peripheral rim. At MR, most of the lesions are hypointense on T1 and hyperintense on T2 and intratumoral haemorrhage is well defined as streaked faces of high signal intensity on T1 and lower on T2 weighted images. MR is useful to plan surgical limits. CT scan, in the majority of cases, cannot define the nature of the lesion, although it is extremely important during the follow up after surgical or chemotherapy treatment. Selective angiography shows a hypovascular lesion and usually does not add any important information. Scintigraphy shows a large well defined lesion on the liver and has to be considered as routine exam to point out extrahepatic lesions. Moreover is extremely useful for the follow-up to detect relapse (9-14).

Grossly, UES is a large and well circumscribed single mass, with areas of necrosis, haemorrhage and cystic degeneration. A pedunculated variant has also been described; a capsule or pseudo-capsule is often present (10, 15). The imaging findings are often confused for a liver abscess. The lesion is typically located in the right lobe, and there may be extrahepatic involvement at diagnosis. Microscopically UES shows a proliferation of atypical stellate and spindle cell with nuclear pleomorphism and hyperchromasia suspended in a myxoid stroma. Multinucleated giant cells with eosinophilic hyaline globules in the cytoplasm are often present. These globules are PAS-positive and resistant to diastase digestion. It is speculated that they represent apoptotic bodies phagocytosed by tumor cell lysozymes. Small foci of extramedullary hemoatopoiesis may be present (4, 7, 15, 16). Degenerated, dilated biliary duct-like structures surrounded by neoplastic cells are frequently found. These structures are typical of primary UES and are considered to normal residual biliary ducts involved by tumor (5). The immunophenotype of UES is characterized by positivity for alfa-1 anti-trypsin and anti-chymotrypsin, vimentin and cytokeratin. Variable expression of s-100, desmin, muscle-specific actin, alfa-smooth muscle actin and muscle specific actin has been reported. Immunohistochemical analysis can be useful to differentiate UES from other malignant hepatic lesions, su-

ch as sarcomatoid variants of hepatocellular carcinoma or metastasis from sarcomas arising from other sites. Meigenic differentiation can be confirmed by electron microscopy that shows the presence of myofilaments, cross-striations or concentrically arranged intermediate filaments. Stellate cells have often well-represented rough endoplasmic reticulum. Nuclei are pleomorphic and contain euchromatic nucleoli.

The differential diagnosis of UES in middle aged adults includes: malignant fibrous histiocytoma, angiomyolipoma, liposarcoma and leiomyosarcoma (1, 3, 4, 7, 15, 17). UES is a highly aggressive tumor, and complete resection is the single most effective treatment.

However, there has been some positive experience with neoadjuvant chemotherapy and radiotherapy reported in literature, confirming that a multimodal approach provides the best long term outcome (9, 13, 14).

## Conclusion

The presence of a complex cystic lesion in children should raise the possibility of primary undifferentiated embryonal sarcoma of the liver, especially in the setting of abdominal pain. In adults, such a diagnosis is much less common and unlikely to be made preoperatively. However, the finding of a complex cystic lesion in an adult must raise the suspicion of a neoplasm, and resection must be considered. Imaging studies can provide important information regarding the nature of the lesion but often fail to provide complete characterization. Simple hepatic cysts can sometimes give rise to intracystic haemorrhage and may also be complex in nature.

However, caution is advised before making such a diagnosis. The our case highlights the difficulty associated with managing patients with complex cystic lesions, since even though the diagnosis was not made preoperatively, mature judgement led to the correct treatment.

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