Clinics in Surgery

Research Article
Published: 18 Jul, 2023

Undifferentiated Embryonal Sarcoma, a Rare Liver Tumor with Atypical Presentation in an Adult: First Case Reported in Mexico

Flores Maciel KC[1], Flores Cardoza JA[2], Sandoval Alvarado JJ[2]*

[1]Department of General Surgery, Instituto Mexicano del Seguro Social, Unidad Médica De Alta Especialidad Hospital De Gineco Obstetricia Centro Médico Nacional De Occidente, Mexico

[2]Division of Liver Transplantation, Instituto Mexicano del Seguro Social, Unidad Médica De Alta Especialidad Hospital De Gineco Obstetricia Centro Médico Nacional De Occidente, Mexico

Abstract

Undifferentiated Embryonal Sarcoma of the Liver (UESL) is a rare most common pediatric liver tumor, which clinically mimics a liver abscess when presenting with fever, abdominal pain, and a compatible lesion in image studies accompanied with other signs of systemic inflammatory response. There are approximately 108 reported cases in adults worldwide and this is the first reported in México. This case report describes an undifferentiated embryonal sarcoma of the liver in a 29-year-old female, who presented with abdominal pain, fever, nausea and vomiting, simulating a liver abscess, and initially treated like a liver abscess. The suspicion of a malignant tumor was made after its first surgical drainage; however, the histopathological diagnosis was not obtained until complete resection of the lesion was made without neural invasion, with vascular invasion, 20% necrosis, infiltrating edges and an intact capsule. The patient wasn't candidate for chemotherapy due to her functional status. The optimal treatment approach of these neoplasms is not well defined, amongst patients who undergo surgery the indications for resection versus transplantation are not defined. Moreover, the benefit of adjuvant treatment remains questionable with existing literature reporting minimal if any benefit. The prognosis of patients with this tumor is poor, and rarely survival beyond 2 years. Nevertheless, our patient remains asymptomatic and whit no signs of recurrence after eleven months of resection.

Keywords: Undifferentiated embryonal sarcoma of the liver; Liver sarcoma; Malignant hepatic tumor; Liver; Sarcoma

OPEN ACCESS

Correspondence:
Karla Carolina Flores Maciel, Department of General Surgery, Unidad Médica De Alta Especialidad Hospital De Gineco Obstetricia Centro Médico Nacional De Occidente, Av. Belisario Domínguez 1000, Col. Independencia, C.P. 44329, Guadalajara, Jalisco, Mexico, Tel: 3318954854

Received Date: *28 Jun 2023*
Accepted Date: *13 Jul 2023*
Published Date: *18 Jul 2023*

Citation:
Flores Maciel KC, Flores Cardoza JA, Sandoval Alvarado JJ. Undifferentiated Embryonal Sarcoma, a Rare Liver Tumor with Atypical Presentation in an Adult: First Case Reported in Mexico. Clin Surg. 2023; 8: 3652.

Introduction

Undifferentiated embryonal sarcoma is the third most common malignant liver tumor in children [1]. However, in adults it is extremely rare, there are approximately 108 reported cases in adults and because of this there are limited data on the prognosis and treatment of these patients. Also, being a rare pathology, it is little suspected in adults, it is usually confused with other liver pathologies and it receives delayed treated [2].

In the present study we report the case of a 29-year-old patient who presented clinically as a liver abscess, however, when draining it, the first suspicion of liver neoplasia was obtained, which was confirmed up to seven months after the onset of the disease.

Case Presentation

This is a 29-year-old female patient who presented to the emergency department of her regional hospital due to constant right upper quadrant abdominal pain associated with fever of up to 40°C, nausea and vomiting of one week's duration. The patient had a family history of colon, breast, and thyroid cancer. She was previously healthy, with no history of liver disease. She had previous cesarean section and an exploratory laparotomy for an ectopic pregnancy as surgical antecedents. The patient was initially managed for a probable liver abscess, since they had imaging studies, Ultrasound (USG) and Computerized axial Tomography (CT) that reported a lesion compatible with a liver abscess in the right lobe, segments V-VIII and systemic inflammatory response (fever and leukocytosis). For this reason, it was decided to perform open drainage of the same, observing a liver tumor of approximately 12 cm and obtaining by puncture approximately 300 ml of mucinous

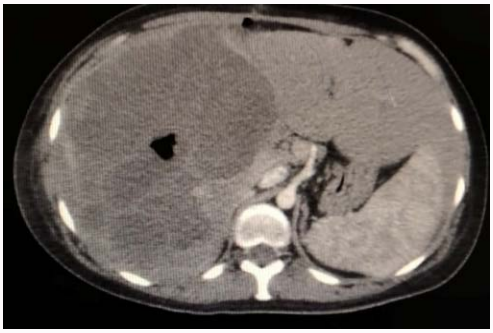

Figure 1: Abdominal Tomography with intravenous contrast in the arterial phase showing a liver lesion covering the entire right hepatic lobe of approximately 18 cm, heterogeneous, irregular, with contrast-enhancing septa, and apparent central necrosis.

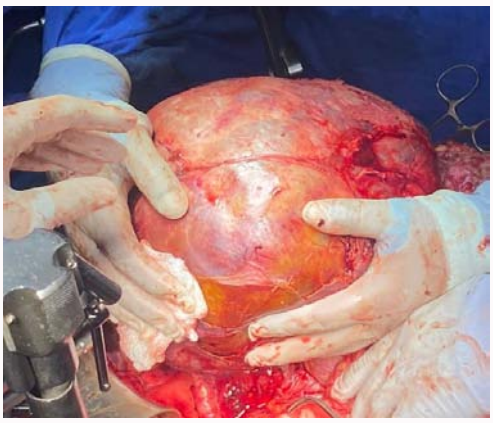

Figure 2: Tumor of the right hepatic lobe. Intraoperative photograph during its resection.

and serohematic fluid. A sample of said fluid is sent to pathology where they concluded that no malignancy was observed and she was discharged from surgery. Three months after this surgical event, the symptoms worsened again with pain in the right hypochondrium, fever up to 39°C, nausea and vomiting. An imaging study was performed again, observing a heterogeneous mass in the right hepatic lobe of 18 cm × 14 cm, suggestive of a liver abscess, for which they again proceeded to exploratory laparotomy and obtained little fibrinous-purulent material, clots, and mucus from the lesion. She was discharged due to improvement. Two months later, she returned for medical attention, this time at Centro Médico Nacional de Occidente, Hospital de Especialidades, due to pain in the upper right quadrant and vomiting. She underwent an abdominal-pelvic CT scan with intravenous contrast, describing an amebic abscess as the first possibility in the right hepatic lobe of approximately 3,190 cc (Figure 1). She is scheduled for a liver abscess open drainage and biopsy. The histopathological result reported fragments of fibroconnective tissue with extensive necrosis, fibrin deposits, and mixed inflammatory infiltrate. Not detecting malignancy in the sample. Serum tumor markers, alpha-fetoprotein, CA 19-9 and ACE were taken, resulting in negative results. Also, serologies for Human Immunodeficiency Virus (HIV), Hepatitis C Virus (HCV) and Hepatitis B Virus (HBV) which were negative. A month later, a new surgical procedure is scheduled with the intention of resecting the lesion; however, due to significant bleeding during the procedure and instability of the patient, it was decided to perform the resection in two stages. In the

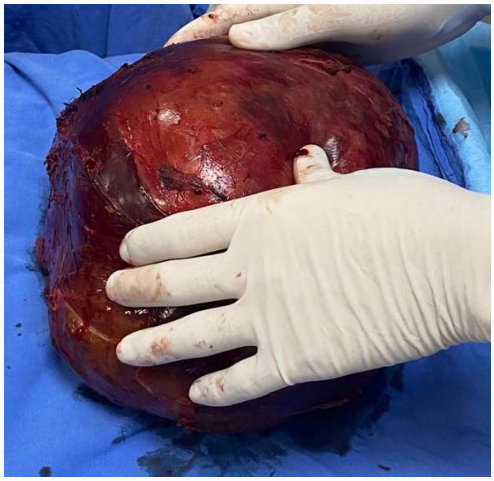

Figure 3: Right lobe liver tumor, already resected, reported in definitive histopathological study as undifferentiated embryonal sarcoma.

following surgery, a right hepatectomy was performed, finding a giant liver tumor of mixed consistency that displaced the right hepatic lobe and adjacent structures (Figure 2, 3). The patient leaves unstable to intensive care and after stabilization she goes to general bed to continue recovery. In the histopathological study an undifferentiated embryonal sarcoma is reported, without neural invasion, with vascular invasion, 20% necrosis, infiltrating edges and an intact capsule. It was positive for alpha antichymotrypsin, glypican 3, BCL2, and vimentin; negative for desmin. The patient was discharged from the hospital due to improvement and during the outpatient follow-up she presented subglottic stenosis due to prolonged intubation which was palliated with a tracheostomy cannula. Currently, 11 months after the resection, she is under surveillance by oncology and general surgery with no recurrence of the illness.

Discussion

UESL is a type of rare malignant mesenchymal tumor, first described in 1978. This is a tumor of very low incidence, more frequent in children, with a high degree of malignancy, high mortality, and a poor prognosis. It occurs more in women at a ratio of 1.4:1 [2,3]. Patients typically report nonspecific symptoms such as abdominal pain, fever, nausea, vomiting, weight loss, fatigue and anorexia; jaundice may be also observed. In children, spontaneous rupture of the tumor with intraperitoneal hemorrhage has even been described [1]. In laboratory tests, liver function and tumor markers such as alpha-fetoprotein are usually normal, unlike other tumors such as hepatoblastoma and hepatocellular carcinoma [4]. And in imaging studies it is usually seen that the right hepatic lobe is the most frequently affected [2,5]. USG usually shows a large, encapsulated tumor, generally measuring more than 10 cm at the time of presentation, with mixed echogenicity, cystic and solid components can be observed within it or even as a single cystic lesion. A peculiar characteristic of this lesion has been described where in USG it is observed as a solid lesion and in CT as a cystic lesion [5]. In our case we did not observe this characteristic, but initially it was observed as a single lesion and later a lesion with multiple septa inside giving a multiloculated appearance. This tumor generally measures more than 10 cm at the time of its presentation, with mixed echogenicity, cystic and solid components can be observed inside it or even as a single cystic lesion. Due to the characteristics in the CT, where a cystic

lesion is observed, there is a misdiagnosis rate of up to 23.5% [3]. The macroscopic findings of these tumors tend to be more related to the USG findings and the cystic appearance of this tumor is believed to be due to the high-water content of the myxoid stroma [6]. On Magnetic Resonance Imaging (NMR) UESL has a high signal on T2-W1 and low signal on T1-W1. Hyperintense areas can be observed on T1-W1 and hypodense areas on T2-W1 corresponding to hemorrhage. When the pseudocapsule is present and the septa have a low intensity in both T1 and T2-W1. Post-contrast CT and MRI images show a slight and progressive enhancement. The pattern of enhancement in late phases post-contrast rules out the purely cystic nature of the lesion [7].

In the histopathological study, UESL are large tumors, which can present hemorrhage, necrosis and pseudocystic areas. They are composed of atypical, stellate, or polygonal spindle cells that stain with PERIODIC ACID-SCHIFF (PAS). There is a clear margin between the tumor and the normal liver, which usually forms a pseudocapsule. Although most cases of UESL are considered to arise *de novo*, there is clinical and histological evidence that these may arise from mesenchymal hamartomas of the liver and similar cytogenetic abnormalities have been found in both lesions suggesting a relationship between the two [6]. Immunohistochemistry is variable and is generally not helpful for diagnosis, but it does facilitate the exclusion of other tumors in the differential diagnosis. Vimentin is usually positive. There is variable staining for glypican 3, CD56, alpha-1 antitrypsin, and alpha-1 antichymotrypsin [8].

UESL is a highly malignant tumor, at the time of diagnosis most patients have progressed to an advanced stage. There is currently no a universally accepted treatment protocol for UESL, although the most common treatment consists of surgical resection with the addition of adjuvant chemotherapy. Since resection with negative margins has been shown to be essential for long-term survival and preoperative chemotherapy reduces tumor volume. However, adults with UESL are less commonly treated with chemotherapy compared with children despite similar tumor size and the same rates of metastatic disease. This could explain why there is a five to 10 times higher risk of mortality in adults compared to children [9].

In large tumors, the two surgical treatment options include extended partial resection outside standard limits and liver transplantation, although tumors surrounding the three major veins of the liver are traditionally considered unresectable [10]. Transcatheter Arterial Chemoembolization (TACE) can be applied as a preoperative treatment in children with unresectable disease since it has been observed that the size of the tumor has reduced after TACE and these were completely removed. However, TACE has not been studied in adults [10].

Historically, the prognosis of UESL is very poor, with 80% mortality at one year, and a 37.5% disease-free survival at three years is also reported, and recurrence is high. Complications such as extrahepatic metastasis can occur in lung, diaphragm and peritoneum, with a prevalence of approximately 20%. Direct invasion of the heart with tumor extension through the vena cava to the right atrium and tumor rupture, which threatens the patient's life, have also been reported [8-11].

When comparing with international literature, a systematic review was carried out in 2020, which included articles on primary sarcomas of the liver from 1996 to 2019. They reported patients 18 years of age or older, excluding case reports, metastatic tumors, and cases of patients with multiple oncology diagnoses. Fifteen studies (14 case series and one retrospective cohort study) were included. It was about 569 patients where it was found that the main signs and symptoms were abdominal pain (57%), palpable mass (27%), weight loss (18%), and fever (10%). Eight percent of the patients were asymptomatic. The most common histological type was angiosarcoma in 32%, with embryonal sarcoma being only 7%. In 78% it was treated with surgical resection and in 17% combined with adjuvant chemotherapy, the most used drugs were doxorubicin, Adriamycin, etoposide, Ifosfamide and cyclophosphamide. Radiotherapy was rarely used. Liver transplantation was performed in 17.3% of cases in one of the largest cohort studies. Transcatheter arterial chemoembolization was performed in 15%. Survival ranged from 2 to 23 months and at 5 years it was 0% to 64% (average 21%). It was observed that R0 resection, combined or not with adjuvant treatment, was the only curative treatment, being the most important prognostic factor. Furthermore, there was an inverse relationship between tumor size and patient survival. Good prognostic factors were: R0 resection, degree of differentiation and epithelioid hemangioendothelioma lineage. Those with a poor prognosis were: R1/R2 resection, angiosarcoma and tumor size of more than 10 cm [12,13].

In conclusion, primary sarcomas of the liver in general, due to their rarity and non-specific symptoms, are difficult to diagnose and it is usually delayed diagnosed in advanced stages. However, these neoplasms require immediate diagnosis and treatment to improve survival. Imaging studies that show large masses that are not compatible with hepatocarcinoma or cholangiocarcinoma should lead to suspicion of this diagnosis, as well as ruptured or bleeding tumors. Preoperative biopsy is not recommended as it can be associated with serious complications such as massive bleeding and death [14]. The treatment of choice is to perform an R0 resection as this represents the only curative modality [15].

Finally, UESL can be misdiagnosed with other liver lesions, a multidisciplinary approach is necessary for an accurate pre-surgical diagnosis; however, the lack of understanding of this tumor makes early diagnosis difficult. In addition, there are no treatment guidelines for the same tumor due to its rarity [11].

Conclusion

UESL is a rare disease, more frequent in children and more studied in this population. This is the first case published in Mexico and highlights the importance of early diagnosis in adults with atypical lesions due to their high aggressive behavior and high mortality in this group of age. In the treatment it is important to perform a radical resection of the tumor achieving an R0, and more studies are necessary to standardize the adjuvant treatment and determine if it improves the patient's prognosis or not, as well as for the creation of international guidelines for diagnosis and treatment of this pathology.

References

1. Thong PM, Dung LT, Luu VD, Lanh NS, Tra My TT, Duc NM. Undifferentiated embryonal sarcoma of liver. J Pediatric Surg Case Rep. 2021;64.

2. Shu B, Gong L, Huang X, Cao L, Yan Z, Yang S. Undifferentiated embryonal sarcoma of the liver in adults: Retrospective analysis of a case series and systematic review. Oncol Lett. 2020;20(4):102.

3. Xie ZY, Li LP, Wu WJ, Sun DY, Zhou MH, Zhao YG. Undifferentiated embryonal sarcoma of the liver mistaken for hepatic abscess in an adult.

Oncol Lett. 2014;8(3):1184-6.

4. Gerson G, Valença J, Cavalcante J, Coêlho RAB. Undifferentiated embryonal sarcoma of the liver in the elderly: Case report and review of the literature. Indian J Pathol Microbiol. 2019;62(1):129-31.
5. Thombare P, Verma M, Shah K, Doshi H, Verma G, Patkar D. Undifferentiated embryonal sarcoma of liver: Paradoxical imaging appearance. Radiol Case Rep. 2020;15(7):1095-98.
6. Geel JA, Loveland JA, Pitcher GJ, Beale P, Kotzen J, Poole JE. Management of undifferentiated embryonal sarcoma of the liver in children: A case series and management review. S Afr Med J. 2013;103(10):728-31.
7. Gomes F, Melo D, Esteves C, Lima B, Carneiro F, Oliveira P. Undifferentiated embryonal sarcoma of the liver: A rare hepatic tumor and its related characteristic radiological features. Radiol Case Rep. 2021;16(3):646-50.
8. Zhang H, Lei L, Zuppan CW, Race AS. Undifferentiated embryonal sarcoma of the liver with an unusual presentation: Case report and review of the literature. J Gastrointest Oncol. 2016;7:S100-6.
9. Ziogas IA, Zamora IJ, Lovvorn HN, Bailey CE, Alexopoulos SP. Undifferentiated embryonal sarcoma of the liver in children versus adults: A national cancer database analysis. Cancers (Basel). 2021;13(12):2918.
10. Kim DY, Kim KH, Jung SE, Lee SC, Park KW, Kim WK. Undifferentiated (embryonal) sarcoma of the liver: Combination treatment by surgery and chemotherapy. J Pediatric Surg. 2002;37(10):1419-23.
11. Bahador A, Forooghi M, Shahriarirad R, Geramizadeh B, Ataollahi M, Kamran H. A large undifferentiated sarcoma of the liver in a 13-year-old girl treated with anatomical resection: A case report and review of the literature. BMC Gastroenterol. 2022;22(1):2.
12. Konstantinidis IT, Note C, Jutric Z, Ituarte P, Chow W, Chu P, et al. Primary liver sarcomas in the modern era: Resection or transplantation? J Surg Oncol. 2018;117(5):886-91.
13. Martins AC de A, Neto DC da C, Silva E JDDM, Moraes YM, Leão CS, Martins C. Adult primary liver sarcoma: Systematic review. Rev Col Bras Cir. 2020;47:1-10.
14. Lin YH, Lin CC, Counselor AM, Yong CC, Kuo FY, Wang CC. Surgical experience of adult primary hepatic sarcomas. World J Surg Oncol. 2015;13(1):87.
15. Poggio JL, Nagorney DM, Nascimento AG, Rowland C, Kay P, Young RM, et al. Surgical treatment of adult primary hepatic sarcoma.Br J Surg. 2000;87:1500-5.