

# Cystic hepatic metastases: A rare mimic of liver abscesses

Su Yin Lau, FRACP, Wan Muhamad Amir Wan Md Zin, MBBS, Wan Zul Haikal Hafiz Wan Zukiman, MMed

Department of Medicine, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Serdang, Selangor, Malaysia

### SUMMARY

Cystic hepatic metastases (CHM) in patients with colorectal cancer are rare but important to recognize. In patients presenting with sepsis, differentiating superinfection of CHM from liver abscesses becomes challenging. Our patient presented with fevers, abdominal discomfort and an ultrasound showed cystic liver lesions, with the largest lesion measuring 11.8 cm in size. With a clinical picture of sepsis, the lesions were thought to be due to liver abscesses. Despite percutaneous drainage and antibiotics, her septic parameters worsened. A computed tomography (CT) performed showed a circumferential bowel mass in the hepatic flexure, later confirmed as transverse colon carcinoma. In the setting of extrahepatic malignancy, CHM is an important differential diagnosis in patients found to have cystic liver lesions. Imaging of the liver may be helpful as hepatic metastases have a higher degree of septations on ultrasound, and rim enhancement on CT only occurs during the arterial phase, whereas rim enhancement persists throughout the arterial and portal venous phase in liver abscesses.

### INTRODUCTION

Colorectal cancer is the third most common cancer contributing 10% of all cancers worldwide. Although colorectal cancer screening programmes have been available, 70% of patients present with stage III or IV disease: lung and liver metastases being most common.<sup>1</sup> Cystic hepatic metastases (CHM) from colon cancer however remain rare and can be difficult to differentiate from liver abscesses when a patient presents with sepsis. Herein, we present a case of cystic liver lesions, with the largest measuring 11.8 cm, highlighting the lessons learned from this case.

### CASE PRESENTATION

A 66-year-old obese lady was admitted to the hospital with fevers, right-sided abdominal discomfort and loss of appetite. Two weeks prior, she presented with similar symptoms to a different center, and was diagnosed to have liver abscesses on computed tomography (CT); the largest lesion measuring 9.5 cm in size. There was also a short segment of bowel wall thickening at the hepatic flexure with large peri-colonic lymphadenopathy. She unfortunately self-discharged home against medical advice. During this admission, her blood investigations showed an elevated white cell count 25.2 (reference range 4.1–11.4 × 10<sup>9</sup>/L), C-reactive protein of 149.3 (reference range <5 mg/L) and procalcitonin of 4.57 (range

0.5–2.0 ng/mL: systemic infection is possible but other conditions may also induce significant procalcitonin rises; 2–10 ng/mL: systemic infection is likely; ≥10 ng/mL: high likelihood of severe bacterial sepsis or septic shock). Her alkaline phosphatase level was elevated 439 (reference range 35–104 U/L), but all other liver enzymes remained normal. An ultrasound abdomen was performed, confirming uncomplicated cholelithiasis and comparing with previous imaging, the lesions have enlarged with liquefied components, the largest measuring 11.8 cm × 5.5 cm in segment VI of the liver (Figure 1). A percutaneous pigtail drain was inserted into the segment VI liver lesion, draining non-purulent serosanguineous fluid.

Despite the continuation of antibiotics and percutaneous drainage, the patient's septic parameters worsened, and hence contrast-enhanced CT was performed (Figure 2). This showed a slight improvement of the segment VI collection, however a circumferential bowel mass over the hepatic flexure was seen, causing luminal narrowing with proximal bowel dilatation. Her serum carcinoembryonic antigen (CEA) was raised at 13.2 (reference range <5 ng/mL).

Due to impending large bowel obstruction, a multidisciplinary discussion with the family was held, and we proceeded to a laparotomy. Her laparotomy findings confirmed a constricting tumour in the proximal transverse colon with liver and omental metastasis. A palliative loop ileostomy was performed. Immunohistochemical studies of the omental and peritoneal nodules biopsied were positive for CEA, but negative for cytokeratin 7 and 20, consistent with a colorectal cancer origin. Unfortunately, the patient continued to deteriorate clinically and passed away a few days after surgery due to overwhelming sepsis and multiorgan failure.

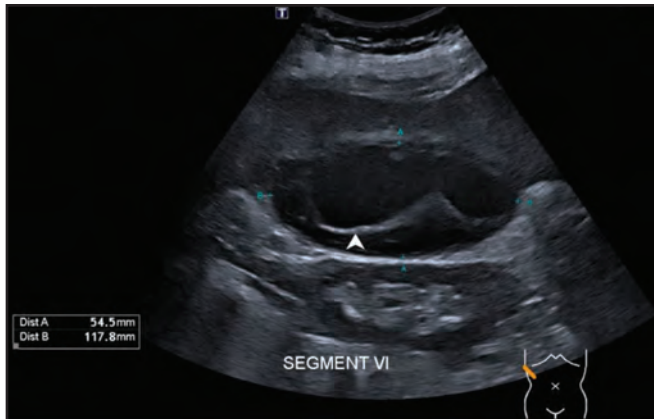
### DISCUSSION

Cystic lesions in the liver are commonly found on imaging. The cause of these ranges from clinically insignificant benign lesions to potentially life-threatening and malignant lesions. There have been various classifications of cystic liver lesions and are mainly divided into infective (parasitic and non-parasitic) and non-infective causes (benign, pre-malignant, malignant and traumatic). Pre-malignant and malignant causes include biliary cystadenoma, intraductal papillary neoplasm of the bile duct, Caroli disease, bile duct hamartomas, biliary cystadenocarcinoma, cystic hepatocellular carcinoma, undifferentiated embryonal sarcoma and CHM.<sup>2</sup>

This article was accepted: 17 December 2022

Corresponding Author: Su Yin Lau

Email: [suyin.lau@upm.edu.my](mailto:suyin.lau@upm.edu.my)



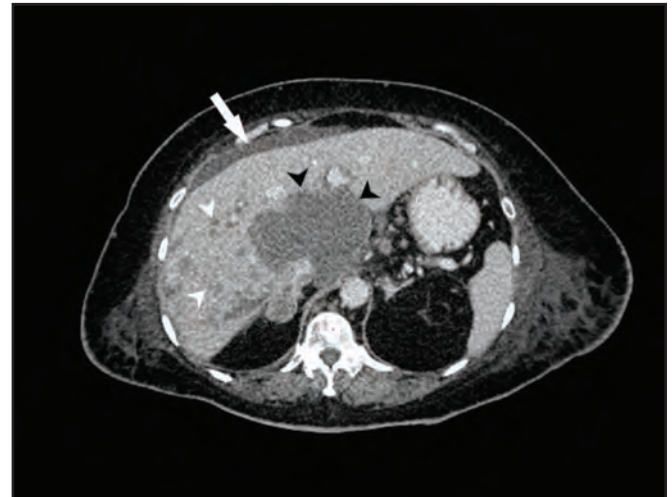
**Fig. 2:** Ultrasound scan showing a 11.8 cm × 5.5 cm cystic liver lesion with septation (white solid arrowhead)

CHM from colon cancer is rare and only a few cases have been reported in the literature. In a study done in Japan, only 6 out of 325 cases were reported to be CHM in a span of 11 years.<sup>3</sup> Kidney, prostate, ovary/testis, squamous cell lung cancer, gastrointestinal stromal tumour, sarcoma, and neuroendocrine tumours have been previously described to be primary sources.<sup>2</sup>

The development of CHM is poorly understood. Theories include i) acceleration of tumour growth, outstripping its blood supply leading to central necrosis and haemorrhage or ii) accumulation of mucinous and serous fluid produced by mucinous adenocarcinoma as seen in patients with colorectal, ovarian and pancreatic cancer.<sup>4,5</sup> Pathological specimens from the case series in Japan confirmed necrotic changes with clots within cystic cavities.<sup>3</sup>

In a patient with sepsis, differentiating CHM from liver abscesses becomes challenging. Imaging the liver may be helpful in distinguishing the two. Hepatic metastases have a higher degree of septations on ultrasound and heterogenous ill-defined borders with arterial rim enhancement on CT corresponding to tumour viability at the periphery. Liver abscesses however have persisting rim enhancement throughout arterial and portal venous phases.<sup>6,7</sup> Our patient indeed had septations on ultrasound but no rim enhancement on arterial or portal venous phase on CT.

Aspiration of fluid from the lesions is usually not encouraged for diagnosis of CHM. However, if superinfection of metastatic liver lesions is suspected, a percutaneous needle aspiration or drainage is required. Our patient was initially thought to have liver abscesses based on her CT report and hence a percutaneous drain was inserted. Fluid analysis was reported to be serosanguineous in appearance, showed no atypical cells and the culture was negative, confirming a non-infective cause.



**Fig. 2:** CT image showing multiple cystic lesions in the liver (white solid arrowhead) with the largest in the caudate lobe (black solid arrowhead). Ascites present (white arrow). Note the heterogenous ill-defined borders of the largest cystic lesion with no rim enhancement

Management of metastatic colorectal cancer includes liver resection. The median survival post resection in patients with CHM was 57 months based on a small case series of six patients.<sup>3</sup> Our patient however was too unwell for a major surgery and hence a palliative loop ileostomy was performed

## CONCLUSION

There are two major learning points in this case presented. The first is clinician awareness of CHM especially in a patient with underlying malignancy. A multidisciplinary team discussion involving radiologists, physicians and surgeons early in the admission would have given a better perspective on the course of management. These would include reviewing her previous CT images performed in the centre prior to admission, potentially identifying the more sinister cause of bowel thickening and avoiding a percutaneous drain insertion.

## ACKNOWLEDGEMENTS

The authors would like to thank the patient's family for giving consent to the production of this case report.

## DECLARATIONS

Consent was taken from next of kin of the patient. The authors declare no competing interests with respect to the authorship and publication of this article.

## REFERENCES

1. Ministry of Health Malaysia National Strategic Plan for Colorectal Cancer (NSPCRC). Available from: <http://www.moh.gov.my>
2. Rawla P, Sunkara T, Muralidharan P, Raj JP. An updated review of cystic hepatic lesions. *Clin Exp Hepatol* 2019; 5(1): 22–9.

## Case Report

3. Sugawara Y, Yamamoto J, Yamasaki S, Shimada K, Kosuge T, Sakamoto M. Cystic liver metastases from colorectal cancer. *J Surg Oncol* 2000; 74(2): 148–52.
4. Chung AY, Chui CH, Tan YM, Kwek BH, Tan HW, Thng CH, et al. Giant cystic colorectal liver metastasis: an unusual presentation. *Dig Dis Sci*. 2007; 52(9): 2333–5.
5. Pitchaimuthu M, Duxbury M. Cystic lesions of the liver - a review. *Curr Probl Surg* 2017; 54(10): 514–42.
6. Del Poggio P, Buonocore M. Cystic tumors of the liver: a practical approach. *World J Gastroenterol* 2008; 14(23): 3616–20.
7. Oh JG, Choi SY, Lee MH, Lee JE, Yi BH, Kim SS, et al. Differentiation of hepatic abscess from metastasis on contrast-enhanced dynamic computed tomography in patients with a history of extrahepatic malignancy: emphasis on dynamic change of arterial rim enhancement. *Abdom Radiol (NY)* 2019; 44(2): 529–38.