

CASE REPORT

# Uncommon Finding of a Gastrointestinal Stromal Tumor in a Patient with Hyperechoic Liver Lesions - Case Report

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**Introduction:** Hyperechoic liver lesions identified by conventional ultrasonography are diverse in underlying pathology and most of the time require further investigations. Gastrointestinal stromal tumors (GIST) are rare neoplasms of the gastrointestinal tract which are uncommonly found in metastatic stages at first presentation. **Case report:** We present the case of a 51 years old woman with nonspecific symptoms in which conventional ultrasonography showed hyperechoic lesions in the right lobe of the liver with a diameter up to 40 mm. Esophagogastro-duodenoscopy revealed a submucosal tumor on the small curvature of the stomach, on the anterior wall, with central ulceration, with normal narrow band imaging (NBI) mucosal pattern and negative gastric biopsy. Contrast enhanced ultrasonography was performed, describing multiple lesions with inhomogeneous enhancement in the arterial phase and rapid washout at the end of arterial phase. Endoscopic ultrasound with fine needle aspiration (EUS-FNA) biopsy examination was definitive for the final diagnosis of epithelioid gastric gastrointestinal stromal tumor. The patient was diagnosed with T2N0M1 epithelioid gastric GIST, stage IV, and is currently under treatment with tyrosine kinase inhibitors. **Conclusions:** GIST represent a diagnostic challenge in medical practice because of its size, unusual location in the submucosal layer and lack of symptoms. The role of EUS-FNA is of paramount importance in increasing the accuracy of diagnosis in the case of GIST. The particularity in our case consists of the unusual presentation with the lack of specific symptoms and signs associated with the presence of metastatic lesions at the moment of the diagnosis of GIST.

**Keywords:** gastrointestinal stromal tumors, endoscopic ultrasound, fine needle aspiration biopsy

Received 11 August 2018 / Accepted 30 October 2018

## Introduction

Hyperechoic liver lesions identified by conventional ultrasonography are diverse in underlying pathology, and usually require careful examination and additional investigations in order to improve diagnostic accuracy [1].

Gastrointestinal stromal tumors (GIST) represent rare neoplasms of the gastrointestinal tract [2], with a reported incidence in most studies between 10-15 cases per million, with an equal distribution between male and females, and a peak incidence in the sixth decade [3].

## Case report

A 51 year-old woman was referred to our department for abdominal pain in the right upper quadrant, asthenia, moderate weight loss in the last six months, with no other associated alarm symptoms, and a negative family and personal medical history.

Laboratory values showed no pathological changes. Conventional ultrasonography was performed which showed hyperechoic lesions in the right lobe of the liver with a diameter up to 40 mm, most of them with indistinct margins and peripheral halo, alongside rounded hyperechoic lesions with distinct margins (Figure 1).

The patient underwent an esophagogastroduodenoscopy which showed a submucosal tumor on the small

curvature of the stomach, on the anterior wall, with central ulceration and no signs of active bleeding (Figure 2). Narrow band imaging (NBI) examination was performed, describing normal mucosal pattern. Biopsy specimen from the lesion showed normal gastric mucosa.

Total colonoscopy was performed in order to rule out a primary lesion which could be linked to the liver lesions, with no pathological findings being described on the examined tract.

In order to increase diagnostic accuracy, contrast enhanced ultrasonography was performed, describing multiple lesions with inhomogeneous enhancement in the arterial phase and rapid washout at the end of arterial phase (Figure 3). In the venous and parenchymal phase the lesions were hypoechoic.

Ultrasound guided conventional liver sample biopsy from the hyperechoic lesions was inconclusive, without any signs of malignancy or positive immunohistochemistry staining from the selected specimen.

The patient was afterwards referred to endoscopic ultrasound with fine needle aspiration (EUS-FNA) biopsy. The tumor, originating in the muscularis propria, with a diameter of 17/17 mm was described on the anterior wall of the gastric corpus. Biopsy specimens from the gastric lesions put the diagnosis of epithelioid gastric gastrointestinal stromal tumor with low mitotic rate (gastric foveolar epithelium and cells with oval nuclei, and eosinophil cyto-

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plasm, with irregular margins and rare mitosis (1-2), without any signs of central necrosis) The hepatic lesions were described as having similar morphology. Immunostaining examination of both gastric and hepatic lesions showed intense positivity for c-KIT, DOG1, CD34 and negativity for SMA, S100 markers.

Contrast enhanced computed tomography of the chest, abdomen and pelvis was performed and ruled out local lymph nodes involvement or other sites of metastasis.

Finally, the patient was diagnosed with T2N0M1 epithelioid gastric GIST, stage IV, according to GIST pathology staging and prognostic group classification. She is currently under treatment with tyrosine kinase inhibitors (Imatinib mesylate) and presents with a stationary evolution.

## Discussions

GISTs represent the most common sarcoma of the gastrointestinal tract neoplasms, associated with the activation of gene mutation such as KIT and PDGFRA [4]. Sporadic GISTs represent 95% of cases and have been associated with an increased incidence of other cancers such as prostate, breast, small intestine or colorectal cancer [5]. GISTs

in direct association with other pathologies are described in syndromes such as neurofibromatosis type 1, Carney's triad (gastric GIST, paraganglioma, pulmonary chondroma), or familial GIST syndrome [6].

Focal liver lesions, especially in non-cirrhotic patients, are detected in most of the cases incidentally or during follow-up for a primary neoplasm, usually at conventional ultrasound [7]. Contrast-enhanced ultrasound (CEUS) has improved the detection rate of diagnosis, with a reported sensitivity and specificity ranging from 80-95% [8]. Malignancies are usually described in CEUS as hypoechoic lesions. Metastases are described as hypo- or hypervascular lesions, the difference being noted at the enhancement during the arterial phase [9].

The particularity in our case is the description at conventional ultrasound of both hyperechoic lesions, with indistinct margins and peripheral halo as well as rounded lesions with more distinct margins. CEUS described hypovascular lesion with weak enhancement in the arterial phase and rapid washout at the end of arterial phase with no lesions with progressive centripetal fill in arterial phase and a persistent hyperechogenicity in late-phase suggesting hemangiomas.

Esophagogastroduodenoscopy has a high detection rate in esophageal and gastric carcinoma [10], but less in GIST due to its submucosal localization, which impairs the possibility of obtaining conventional endoscopic biopsy.

Consequently, endoscopic ultrasound with fine needle aspiration (EUS-FNA) is recommended when gastric GISTs are found incidentally and has emerged as a helpful mean of sampling potential GISTs.

Alongside sonographic features provided by EUS, which supplies significant differential diagnosis data, FNA biopsy is essential for specimen analysis and immunohistochemistry studies [11].

Morphological patterns associated with GISTs are spindle cell, epithelioid or mixed subtype and require immunohistochemical stains in order to confirm the suspected

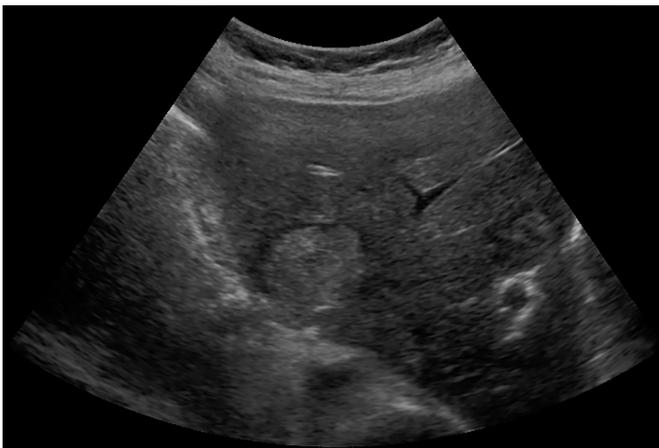


Fig. 1. Conventional ultrasonography view of the liver lesions



Fig. 2. Endoscopic views of the submucosal tumor - normal view (right) and Narrow Band Imaging (NBI) examination (left)

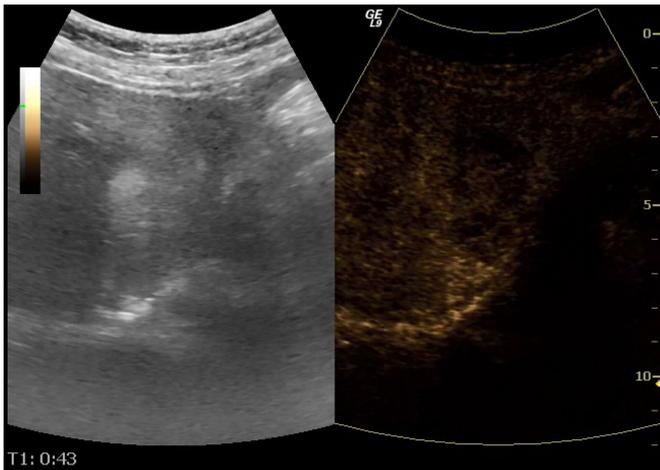


Fig. 3. Contrast enhanced ultrasonography view of the liver lesions - arterial phase

diagnosis. Most of the tumors are positive for *c*-KIT and anoctamin 1, also known as DOG1, being the most sensitive and specific markers for GIST [12,13].

The first line treatment of GIST in patients, including the cases with resectable metastatic tumors, is surgery or endoscopic resection [2].

Liver and lymph nodes metastases have been reported in published data [14], and represent a major determinant of patient survival and a challenge in the management of GIST treatment.

Abuzakhm et al. describe a case of gastrointestinal stromal tumor located in the jejunum associated with liver metastasis discovered a short period after the diagnosis of GIST [15].

Burkill et al. state in their study the increased incidence of liver or peritoneum metastasis, but usually discovered during follow-up after surgical resection of GIST. Liver metastasis were associated with GIST who presented increased size at diagnosis or the histopathological presence of central necrosis [16].

The particularity in our case is the presence of liver metastasis in an asymptomatic patient, with a small-sized GIST which was later diagnosed, without the presence of central necrosis.

Median survival of patients with metastatic GIST is described in literature 51-57 months, and has radically increased after the emergence of tyrosine kinase inhibitors (TKIs), such as Imatinib mesylate treatment [17,18].

## Conclusions

Hyperechoic liver lesions include a broad spectrum of pathologies, which most of the time require further investigations. GIST is a rare neoplasm of the gastrointestinal tract, difficult to diagnose because of its size, unusual location in the submucosal layer and lack of symptoms, that is rarely found in a metastatic stage.

The particularity in our case consists of the unusual presentation with the lack of specific symptoms and signs, and the fact that metastatic lesions were already present at the moment of the diagnosis of GIST.

## Authors' contribution

AMR – Software, writing original draft, writing review and editing

DD – Project administration; Supervision; Validation)

CF – Formal analysis, writing review and editing

AB – Conceptualization, project administration, supervision, validation, writing review and editing

## Conflict of interest

The authors have no conflict of interests.

## Acknowledgment

A signed statement of informed consent to publish was signed by the patient (Nr. 6003/26.02.2018).

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