Gastrointestinal stromal tumor of the stomach and hepatocellular carcinoma: An unusual association

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1. Introduction

Gastrointestinal stromal tumors (GIST) are uncommon, potentially malignant tumors that arise in the wall of the gastrointestinal tract. These tumors account for 1% of all gastrointestinal neoplasms [1] and they are the most frequent mesenchymal tumors in that location [2–3]. They can occur in any portion of digestive tract but they are mainly localized in the stomach (40–65%) and small intestine (25–40%). Its occurrence has a unimodal distribution with a mean at-onset age varying between 59 and 79 years [1–6], with a male increased relative risk [4]. GIST typically exhibits immunohistochemical positivity for vimentin in almost all cases, for CD117 (c-Kit) in 95% and for CD34 in 60–70% (80% in gastric location) [7]. The occurrence of simultaneous tumors in patients with GIST has been reported in 13–43% of patients [8–10] and up to 50% can develop metastasis, mainly in the liver [5]. GIST can occur simultaneously with chronic lymphocytic leukemia, lymphoma, renal cell carcinoma or gastric cancer, but the association with hepatocellular carcinoma (HCC) is extremely rare [10]. The incidence of HCC is increasing. This tumor typically arises in an underlying cirrhotic liver, with well known risk factors including alcoholic abuse, hepatitis B and C chronic infections, non-alcoholic steatohepatitis and other causes of cirrhosis. Up to 25% of tumors, however, arise in non-cirrhotic livers [11] and despite their frequent large size when diagnosed, potentially curative treatments can be offered with a better outcome than tumors arising in cirrhotic liver. [12]

Herein, we report a challenging diagnosis and decision making case of a patient admitted to our medical institution with the unusual coexistence of a gastric GIST and HCC developing in a non-cirrhotic liver.

2. Presentation of case

A 76 year-old caucasian male was admitted in our emergency department with an upper gastrointestinal bleeding episode associated with mild upper abdominal pain and non quantified weight loss. Three years previously, the patient had been submitted to a distal gastrectomy with a Billroth II reconstruction at another institution in an attempt to remove a gastric GIST; no tumor, however, was identified in the surgical specimen, and the patient deliberately refused any further treatment or follow-up at that institution.

Apart from minor depression, no other significant medical history was noticed. He was medicated with dulosepin 75 mg i.d. and pantoprazole 40 mg i.d. He was negative for hepatitis virus B and C infection markers.

The physical exam only identified skin pallor. Blood tests showed haemoglobin of 5.5 g/dL and no other relevant changes. The patient was transfused with 3 red blood cell units. An upper endoscopy was performed and a polypoid bulging segment with a central bleeding ulceration below the cardia was identified. The bleeding was successfully controlled by endoscopic clipping and adrenaline injection.
CT-imaging showing the hepatic and gastric masses.

Fig. 1. CT-imaging showing the hepatic and gastric masses.

Intra-operative view: (a) performed gastrostomy with gastric lesion; (b) hepatic lesion.

Fig. 2. Intra-operative view: (a) performed gastrostomy with gastric lesion; (b) hepatic lesion.

A CT-scan showed a 78 × 86 mm tumor in the stomach remnant and a 34 × 28 mm nodular lesion in the left liver lobe, with associated biliary dilatation (Fig. 1).

Echoendoscopic guided biopsies of the gastric and the hepatic lesions were performed and the pathological results were compatible with GIST (CD117+; vimentin+) in the gastric lesion and HCC (HepPar1+; CK7; HSP-70+; Glutaminsynthetase+ [13–14]) in the liver nodule.

At laparotomy, a posterior gastric wall infra-cardiac pedicled lesion with the same size described in CT-scan and a segment III lesion were observed. An anterior gastrostomy was performed in order to enable an atypical gastrectomy of the posterior wall lesion area (Fig. 2a), preserving the previous Billroth II gastrointestinal continuity, and a left liver ultrasound guided lobectomy was followed (Fig. 2b).

Histologically the gastric tumor was compatible with GIST (Fig. 3a). It was 85 mm long, with a mitotic index of 4/50HPF [15]. The hepatic tumor was catalogued as HCC and the underlying liver showed no evidence of cirrhosis (Fig. 3b). The immunohistochemical patterns were similar to those on the previous biopsies. The postoperative period was uneventfully and the patient was discharged on the 7th post-operative day.

The patient was monitored in regular follow-up until 30 months after surgery. No signs of recurrence were found.

3. Discussion

A high (13–43%) prevalence of synchronous malignant tumors has been reported in GIST patients [8–9], with no literature consensus as to the role (if any) of genetic and environmental factors [8]. Synchronous primary liver tumors are not common in these patients [6] and the association of GIST and HCC remains an exceptional event, with very few cases published to the best of our knowledge: one case of perivascular epithelioid cell tumor of the liver [16] and 2 cases of HCC (one c-Kit positive and other c-Kit negative) [17,18] have been reported in association with GIST.

In this context, even considering the relatively high potential to metastasize to the liver, the appearance of an hepatic lesion in GIST patients does not warrant its secondary nature. Therefore, if feasible, a biopsy is of utmost importance in planning the correct
treatment of these patients, especially, as in the present case, when both lesions are considered resectable.

In this case, the diagnostic and staging work-up established the two independent diagnoses and led to the R0 resection of both tumors and to a potentially better prognosis than if the liver lesion had been considered a metastasis from the gastric GIST. In that situation the patient would have been driven to a life-long treatment with a TK inhibitor [19].

4. Conclusion

Despite few reports has shown GIST and HCC association, considering the multiple different treatment perspectives, in diagnosed GIST patients all efforts should be pursued to characterize synchronous hepatic lesions with independent biopsies, in order to plan a correct and tailored treatment of the patients.

Conflicts of interest

All authors disclose any financial and personal relationships with other people or organisations that could inappropriately influence (bias) their work.

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Consent

All authors declare that written and signed consent was obtained to publish this case report. All the patient’s privacy rights were respected. The authors also obtained patient’s consent for the publication of the accompanying images.

Ethical approval

All authors declare that this paper was not a research study.

Author contribution

All authors had equal contribution for this case report.

Guanantor

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