



## Bone metastases as initial presentation of hepatocellular carcinoma

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A 77-year-old male patient was referred to the National Cancer Institute—Fondazione “G Pascale”—IRCCS (Naples, Italy) in February, 2017, with a bulky ulcerated mass located at the left shoulder. He described a fracture of the left clavicle accredited to a mild trauma 4 months previously, and an endovascular graft placement for abdominal aortic aneurysm 3 years ago. Routine blood tests revealed moderate anaemia, a normal platelet count, and elevated liver function tests (aspartate aminotransferase 98 U/L, alanine aminotransferase 66 U/L, and gamma-glutamyl-transferase 166 U/L). A thoracic CT scan highlighted a solid mass with direct invasion of the left clavicle and the acromioclavicular junction (figure) without any other suspicious findings.

A biopsy was done. Histological examination revealed CD10+, CEA+, HCC+, CK8-18+, AFP-epithelial neoplastic cells. An abdominal CT scan was then performed, which showed four bilobar hepatic nodules, the largest of which measured 4.2 cm in diameter and was located in segment III. The radiological findings were consistent with a diagnosis of multifocal hepatocellular carcinoma. Additional blood tests and assessment of tumour markers revealed hepatitis C virus positivity and an  $\alpha$ -fetoprotein concentration of 523.6 ng/mL. After multidisciplinary assessment, the patient was prescribed palliative radiotherapy of the mass (20 Gy in five sessions) and medical treatment with sorafenib (administered orally at a dose of 400 mg twice daily for two cycles, but then suspended because of severe skin toxicity). After 3 months, additional selective embolisation of the mass was attempted without success because of cardiac complications that developed during the procedure. At 9 months from the initial presentation of hepatocellular carcinoma as a symptomatic solitary bone metastasis of the upper limb, the patient was alive with systemic disease progression but then subsequently lost to follow-up.

Bone metastases of hepatocellular carcinoma are uncommon and usually develop in patients with

advanced-stage disease and a pre-existing diagnosis. Nevertheless, when dealing with a non-traumatic fracture, and especially in cases of known liver disease or hepatitis infection, the suspicion of hepatocellular carcinoma should be kept in mind.

### Contributors

AB contributed to study design, data collection, literature search, data analysis, writing of the paper, figure editing, and clinical care of the patient. MG contributed to clinical care of the patient and figure editing. MP contributed to critical review and editing of the paper. FI contributed to critical review of the paper. Written informed consent to publication was obtained.

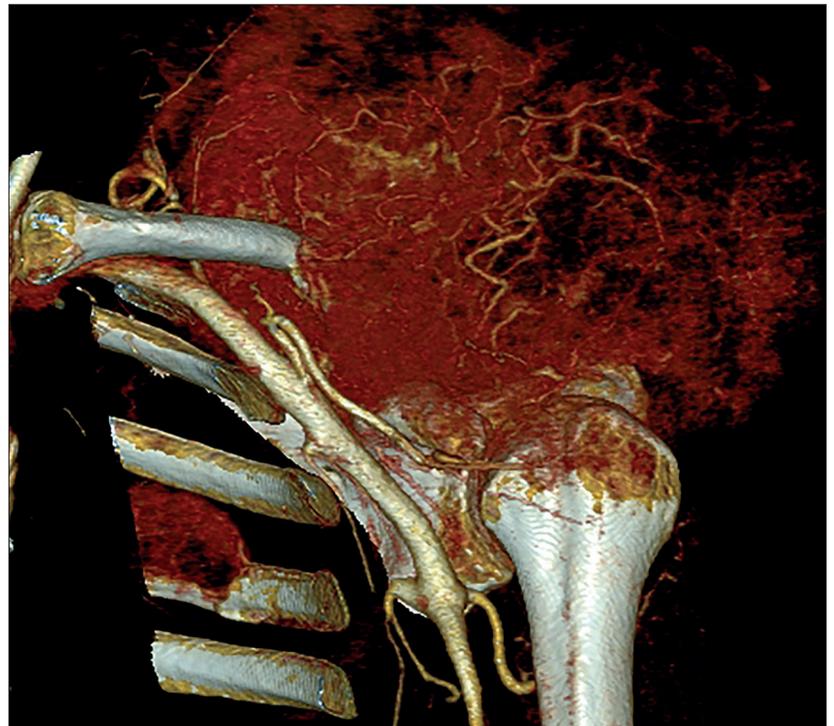
### Declaration of interests

We declare no competing interests.

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**Figure:** 3D reconstruction of a bulky mass of the left shoulder  
3D reconstruction based on arterial phase CT images shows feeder arteries from the left subclavicular artery.