Subcutaneous seeding of hepatocellular carcinoma after fine-needle percutaneous biopsy

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RESUMEN

Los implantes subcutáneos son una complicación rara tras la punción aspiración con aguja fina de los carcinomas hepatocelulares. Los autores describen un caso de implante subcutáneo neoplásico en una mujer de 70 años con cirrosis hepática por virus C complicada con un carcinoma hepatocelular. Se efectuó una punción aspiración con aguja fina en el segmento II hepático. El implante tumoral se desarrolló en el trayecto de la punción aspiración. La tumoralización subcutánea fue extirpada quirúrgicamente y el estudio anatomopatológico confirmó que se trataba de un carcinoma hepatocelular bien diferenciado.


ABSTRACT

Subcutaneous tumor seeding after fine-needle percutaneous biopsy for hepatocellular carcinoma is a rarely seen complication. The authors describe a case of subcutaneous neoplastic seeding in a 70-year-old woman with chronic hepatitis C virus complicated by hepatocellular carcinoma. Ultrasoundically guided fine-needle aspiration biopsy was performed in segment II of the liver. The neoplastic seeding developed along the needle track used to carry out the fine-needle biopsy. The subcutaneous tumor was excised, and histological examination revealed a well-differentiated hepatocellular carcinoma.

Key words: Subcutaneous seeding. Metastasis. Hepatocellular carcinoma. Fine-needle biopsy.

INTRODUCTION

Liver biopsy is the most reliable procedure to determine the nature of any liver mass, with a high sensitivity and specificity. Liver samples for a pathologic study may be obtained by means of four techniques: percutaneous biopsy, trans jugular biopsy, laparoscopic biopsy, and fine-needle aspiration cytology (FNAC) (1).

Fine-needle aspiration cytology (FNAC), either ultrasound- or computerized tomography (CT)-guided, is a reliable and useful procedure for diagnostic purposes regarding liver masses, with a low rate of complications and a high diagnostic reliability. Nevertheless, some authors have reported sporadic cases of implantation and proliferation of neoplastic cells on the way of the puncture of malignant tumors. It is a very uncommon complication, and only a few cases have been reported, so the description of a new case could be useful.

CASE REPORT

A seventy-year-old woman complained of a nodular, mobile and violaceous cutaneous mass that was hard and well demarcated, 4 cm in diameter, and localized in the
The mass had developed 6 months ago, and its growth rate was high and progressive; it was even a little painful. Previous history: a 5-cm hepatocellular carcinoma in the left lobe, and several nodules in the right lobe. There was also liver cirrhosis and hepatitis C. The hepatocellular carcinoma had been diagnosed 15 months before using imaging (CT and magnetic resonance imaging [MRI]), biochemical (α-fetoprotein > 300 mg/l), and histological (FNAC and percutaneous biopsy) procedures. The size and spreading of the tumor made surgery contraindicated. A supraselective chemoembolization through the right common femoral artery was practiced using lipiodol, cisplatinum and embospheres (300-500 μ). Biochemistry: lactate dehydrogenase (LDH) 482 U/l, glutamic-oxaloacetic transaminase (GOT) 182 U/l, glutamic-pyruvic transaminase (GPT) 166 U/l, α-fetoprotein 324.5 μg/ml. An abdominal CT scan showed a solid mass (3.5 cm) in the subcutaneous tissue that was well demarcated, and isodense with the liver. It had not been seen in previous imaging studies, so it was suggestive of a tumor implant (Fig. 2). Simultaneously, several nodular lesions were seen in liver segments II, III, IV and VII. The subcutaneous tumor was on the path followed by an FNAC and percutaneous biopsy practiced in segment II of the left liver lobe a few months ago. There were no other metastatic implants anywhere else.

A diagnosis of subcutaneous metastasis of hepatocellular carcinoma was made, and a surgical excision under general anesthesia was practiced.

Macroscopically, the surgical specimen showed a bulging subcutaneous mass that was 5 cm in diameter, firm, brownish, fleshy, well demarcated, and non-encapsulated (Fig. 3a).

Macroscopically, the tumor was localized in the subcutaneous tissue, near the reticular dermis, lined by a fibrous pseudocapsule. It showed an expansive pattern of growth. It had sheets and bundles of hepatocytes of mixed size and morphology, with a strongly eosinophilic cytoplasm and hyperchromatic and slightly pleomorphic nuclei (Fig. 3b). A few mitotic figures were also seen. Tumor cells were immunoreactive for α-fetoprotein (Fig. 3c) and “Hepatocyte” (Fig. 3d). The Ki-67 labeling index (LI) was high (> 20%). Histological and immunohistochemical features were similar to those of the primary tumor.
Postoperative follow-up was uneventful, and the patient remains on chemoembolization treatment for her liver disease.

DISCUSSION

It seems that 0.7-0.9% of patients with a malignant tumor at any site can develop a cutaneous or subcutaneous metastasis (2). In women, primary tumors include breast and large-bowel cancers, and skin melanoma. In men, these include lung and large-bowel cancers, and skin melanoma (3). Cutaneous or subcutaneous metastasis of a liver hepatocarcinoma are even rarer, because the incidence –and also the tendency to infiltrate the skin– is lower for hepatocarcinoma than for other tumors (2).

Tumors of the liver can develop cutaneous or subcutaneous metastasis in several ways: continuity growth from the liver parenchyma (4); systemic spreading of disease (2), and implantation or tumor seeding after handling the lesion during a surgical procedure (5); a therapeutic ethanol injection (6); or –as in our case– a diagnostic fine-needle aspiration cytology or percutaneous biopsy (7).

FNAC has demonstrated to be useful and reliable for the diagnosis of liver masses. Samples obtained usually allow a diagnosis: sensitivity and specificity are almost 100% (2,8). So this is a routine procedure in hospitals all over the world. FNAC is usually guided by ultrasonography or computarized tomography (CT): its main indications include focal masses of the liver, although some authors state that it can also be useful in the diagnosis of diffuse liver masses (2). In spite of its advantages, it should be taken into account that –as it happened to us– this procedure, as many other invasive procedures, has a rate of morbidity and mortality.

Weiss et al. (9) said that, after a FNAC on a tumor, the number of cells in the way of the needle can be high –very 1,000 cells implanted. In spite of these alarming numbers, Smith et al. (10) studied more than 70,000 patients in the US who had undergone FNAC. They only found 4 cases of tumor implants along the puncture’s trajectory, and none of them was liver-related– 2 were from a renal carcinoma, 1 from a pancreatic carcinoma, and one from a cervical carcinoma.

So the incidence of tumor cell implants after a FNAC should be around 0.006%. Mortality rates from this procedure are similar to those reported for other invasive procedures –between 0.0018 and 0.0096% (8,10). Some authors have reported sporadic cases of cutaneous or subcutaneous implants from hepatocellular carcinoma after FNAC (7,11,12). Implant etiology is sometimes difficult to establish –FNAC or other diagnostic or therapeutic procedures. Our case is undoubtful: figure 2 shows the metastatic implant exactly in the way of the previous puncture in the subxyphoid region. A percutaneous biopsy was also performed, but the sample, in this case, was sheathed, so it is unlikely that this was the origin of the implant. Also, the subcutaneous location of the only metastasis reported favors our diagnosis.

Subcutaneous metastasis from hepatocellular carcinoma are angiomatous, reddish, painless, firm, and non-ulcerated nodules 1.5-2 cm in diameter (2). Our case was a little bigger, and the nodule was possibly painful because of its size.

Cutaneous lesions may also be similar to pyogenic granulomata (6) –a pathologic study is always necessary to reach a diagnosis.

The histological and immunohistochemical study of cutaneous metastases from primary internal tumors may be very difficult, as is the case with poorly differentiated tumors. Sometimes primary differentiated tumors –mainly carcinomas– may become undifferentiated when they develop a metastatic implant. This usually happens in cutaneous metastases, so further testing is necessary to establish the tumor’s nature (3). Monoclonal antibody against mitochondria in hepatocytes (“OCH1ES – Hepatocyte- Hep Par 1”) is very useful in the diagnosis of cutaneous metastasis from poorly differentiated hepatocarcinoma. Anyway, both cytologically and immunohistochemically, our case was a typical well-differentiated hepatocarcinoma similar to the primary tumor. A possible reason for this should be that this metastasis is a direct tumor seeding of the primary hepatocarcinoma; so there is no reason for the tumor to become histologically undifferentiated.

Once a diagnosis has been made, the treatment of cutaneous metastasis –always depending on the patient’s condition and liver disease extent– should be surgical resection.

FNAC complications are so few and sporadic –attending to the high number of FNACs that are usually performed all over the world– that our opinion is that the risk of implants is really extremely low. Nevertheless, our case is useful to alert about this rare but serious complication, which must be taken into account by anyone involved in the diagnosis and treatment of these patients.

REFERENCES