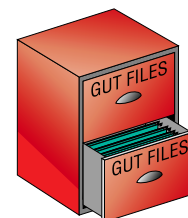


Subcutaneous seeding of hepatocellular carcinoma after percutaneous needle biopsy



Background—In patients with a hepatic mass, malignancy can be diagnosed or excluded by a needle biopsy. However, this procedure can cause the formation of subcutaneous metastatic nodules in the needle tract. We present a case of recurrent subcutaneous seeding four years after a biopsy of a small hepatocellular carcinoma (HCC).

Case report—A 30 year old woman with hepatitis B liver cirrhosis presented with a raised serum α -fetoprotein (AFP) (271 $\mu\text{g/l}$; normal: $<20 \mu\text{g/l}$); ultrasound detected a liver mass. Additional spiral computed tomography showed a 2 cm diameter subcapsular mass in segment V. There were also two satellite lesions, measuring less than

1 cm in the same segment. To confirm the diagnosis of HCC, an ultrasound guided needle biopsy was performed using an 18 gauge Tru-cut needle and Biopty-gun. Two passes were needed to obtain adequate specimens. Subsequent histological examination showed HCC. A right hemihepatectomy was performed, resulting in a radically resected multifocal HCC without vascular ingrowth; the main nodule was located subcapsularly. Follow up consisted of ultrasonography and measurement of serum AFP concentrations twice yearly.

After four years, the patient presented with raised serum AFP and a nodule measuring 1 cm diameter in the subcutaneous fat; this was shown by magnetic resonance imaging (fig 1). No hepatic lesions were detected on the liver. An aspiration biopsy showed characteristics of HCC, and the nodule was excised; histological examination revealed a moderately differentiated HCC.

Discussion—Needle biopsies, especially fine needle biopsies, are considered to be relatively safe and accurate in obtaining a diagnosis of malignancy.^{1–4} However, depending on the retrieval rate, the number of passes needed to obtain sufficient material for histological examination varies. In a porcine model, larger (<20 gauge) needles were more efficient as fewer passes were needed to obtain enough material for histological examination.⁵ Sangalli and colleagues³ found a 86.6% retrieval rate suitable for histological examination, but d'Aquino and coworkers⁶ found only 10 of 27 samples from cirrhotic livers appropriate.

The incidence of needle track seeding may rise as a result of the puncture of tumours detected at an early stage in patients with a longer life expectancy. A multicentre questionnaire detected a needle track dissemination risk of

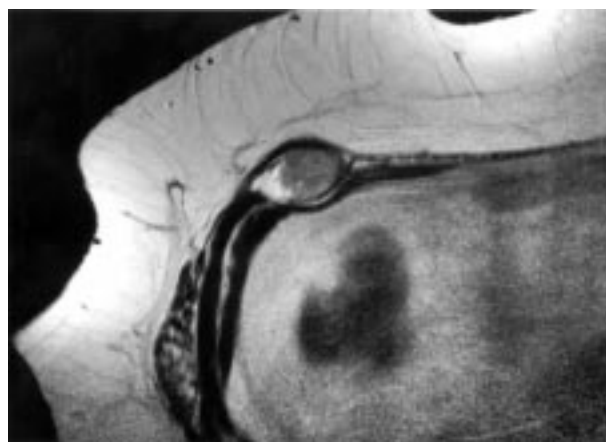


Figure 1 Magnetic resonance imaging of the abdomen four years after hemihepatectomy. A subcutaneous nodule 1 cm in diameter is visible in the subcutaneous fat of the abdominal wall. This is the puncture site of the needle biopsy.

Table 1 Cases of needle track seeding in patients with hepatocellular carcinoma

Reference	Sex/age	Treatment	Death after diagnosis	Recurrence site	Diameter of primary tumour	Needle size	Time between FNAB and recurrence	Puncture purpose	Puncture frequency
Nakamuta and colleagues ¹²	F/63	PEIT	–	Subcutis	2 cm	21 G	5 months	Diagnostic	–
Cedrone and colleagues ¹³	M/64	PEIT	19 months	Abdominal wall	3.2 cm	20–22 G	6 months	Diagnostic/therapeutic	10
Evans and colleagues ¹⁴	M/70	Resection	–	Whole needle track	–	–	12 months	Diagnostic	–
Quaghebeur and colleagues ¹⁵	M/40	Hemihpatectomy	–	Subcutis	–	–	4 years	Diagnostic	–
		Inoperable because of recurrence	3 months	Chest wall	9 cm	Tru-cut?	3 weeks	Diagnostic	–
John and colleagues ¹⁶	M/71	Inoperable because of recurrence	3 months	Abdominal muscle	10 cm	18 G	2 months	Diagnostic	2
Park and colleagues ¹⁷	M/67	TCE	–	Subcutis abdominal wall	9 cm	20 G	4 months	Diagnostic	–
Onodera and colleagues ¹⁸	F/38	TAE	–	Subcutis abdominal wall	4 cm	22 G	3 months	Diagnostic	1
Sakurai and colleagues ¹⁹	M/62	TCE/TAE/lobectomy	–	Subcutis abdominal wall	4.3 cm	Tru-cut?	8 months	Diagnostic	–
Yamada and colleagues ²⁰	F/74	Segmentectomy	–	Subcutis	1.5 cm	21 G	13 months	Diagnostic	2
Isobe and colleagues ²¹	F/47	Left hemihpatectomy	9 months	Subcutis	–	22 G	9 months	Diagnostic	2
Herszenyi and colleagues ²²	–	–	–	Subcutis	–	20 G	–	Diagnostic	1
Jourdan and colleagues ²³	M/34	Left hemihpatectomy	3 years	Intrahepatic	5 cm	>20 G	6 months	Diagnostic	2
Andersson and colleagues ⁹	M/62	Inoperable	11 months	Subcutis, needle track	–	–	1 month	Diagnostic	–
Current study	F/36	Hemihpatectomy	–	Abdominal wall	2 cm	18 G	4 years	Diagnostic	–

PEIT, percutaneous ethanol injection therapy; TCE, transcatheter embolisation; TAE, transarterial embolisation; G, gauge.

0.006%, consistent with the risk found in other studies.⁷ In an animal model, 10^2 to 10^4 tumour cells could be seeded from a solid tumour by a fine needle biopsy⁸; tumour growth resulted in 85% of these seedings. Andersson *et al* concluded that the incidence of implantation metastases after fine needle procedures is probably underestimated because the number of reported cases is not consistent with estimated recurrence risks and, in some cases, recurrence was not reported although known to exist.⁹⁻¹⁰ To our knowledge, 15 needle track seedings after biopsy of HCC have been reported during the past 15 years (table 1).¹¹ In most of these cases, diagnosis of HCC was followed by curative treatment (n=7). Two patients had irresectable cancer because of needle track recurrence, and the primary tumour could not be resected in a further two patients.

Conclusion—A critical evaluation of the role of needle biopsies in resectable HCC is needed. A needle biopsy may be indicated only if it is not possible to diagnose HCC by other means—such as increased AFP concentrations, spiral computed tomography, or magnetic resonance imaging. The needle track should be marked on the skin and pass through liver tissue. Finally, the entire track should be resected at surgery for the primary tumour. A single pass with a larger needle (18 gauge) may be preferable to multiple passes with smaller calibre needles. Needle biopsies are not indicated to confirm HCC in patients suitable for liver transplantation.

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