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health deterioration associated w ith

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nosis and m anagem ent of patients w ith ruptured H CC.

opportunity to underline the im portance of such com plications and dem onstrates the utility of CT imaging for diag -

Case report

A 78-year-old m an w as referred to

the feeding artery w as perform ed

H epaticellular carcinoma (HCC) is

one of the most common cancers in

the world. It is a growing public

health problem and its incidence is

increasing worldwide (most cases of

HCC in Asia and sub-saharan Africa

but recently, in western countries

too (1, 2)). The presence of cirrhosis

is the major risk factor, essentially
due to chronic hepatitis C and hepa-
titis B infection or alcohol dis-

ease (1). Hepaticellular carcinoma is

of poor prognosis; the five-year sur-

vival rate is less than 5 percent (2).
The prognosis depends on hepatic

function, tumour size, and tumour

extent at the time of diagnosis. Nowa-
days, orthotopic liver transplantation

only remains curative, but because of
the shortage of organ donors, these
treatments are applic-

cable only to a small part of all patients.
The majority of the patients

with unresectable HCC are treated

by various palliative therapies

included surgical resection (partial
hepatectomy), or percutaneous
treatment. Despite advances in
imaging techniques and follow-up
programs only 20% of patients are

candidates for surgery at the time of
diagnosis (3, 4) due to an advanced
tumor stage, comorbidities, poor

hepatic functional reserve or short-
age of donor livers.

Case report

A 78-year-old man was referred to

our hospital in September 2008 for a

health deterioration associated with

weight loss. His medical history was

remarkable for silicosis associated

with respiratory failure, type 2 dia-
betes and cerebrovascular accident.
He had a previous history of smok-
ing and persistent alcohol abuse was
documented. On admission, his

height was 185 cm and his body

weight 74 kg. There was no history of

hematemesis, vomiting, flushing or
diarrhea.

Clinical examination revealed a hepatermegal y

without splenomegaly. Jaundice, ascites,

peripheral oedema and other signs

of chronic liver disease were not

observed. The patient's blood pres-
sure was 120/60 mmHg and heart

rate was regular to 74 beats per

minute. Laboratory test revealed

marked leukocytosis (18000/mm³),

hemoglobin level 11g/dl and abnor-

m al liver function tests (ALP/GGT: 125/158 IU/L). Serum tumor markers

were within normal range ( -fetopro-
tein: 2.6 ng/ml). Other laboratory
tests were also within normal range.

However, glycaemia (110 mg/dl) and

HbA1c (7.9%) were slightly elevated.
Tests for hepatitis B and C virus

markers were all negative. The

patient showed a Child-Pugh score

of 7 (class B).

A triphasic contrast enhanced CT-

scan showed three hypervascular

lesions, without clear wash out, sus-

pected of malignancy. The bigger

one was in segment IV (4 × 4 cm)

and near to the liver capsule. The

other lesions were localized in seg-

ment II and in segment VI.

Ultrasound was not contributive

because of patient’s corpulence.

A CT-guided biopsy of the largest

hepatic lesion (segment IV) con-
firmed the diagnosis of well differen-
tiated HCC in a cirrhotic liver. The

patient was medically treated.

On a follow-up CT scan, a few

months later, it appeared that the

segment IV mass was markedly

increased (6 × 5.5 × 7 cm) (Fig. 1A).
The segment II and VI lesion were

confirmed but stable. Additional
tests did not reveal any metastasis.

After multidisciplinary consensus

given the patient’s delicate clini-
cal condition, surgical treatment

was not adequate. In these conditions,

the presence of multiple liver H CC

nodules justified a transarterial

chemoembolization (TACE). TACE

was performed with no intra-opera-
tive complications. Embolization of

the feeding artery was performed

with small gelfoam pledgets before

(to reduce the flow) and after (to

achieve stases) injection of 50 mg of
cisplatine (Fig. 1B and C). Post-

operative and one week control CT-

scan (Fig. 2) didn’t show any sign of

active arterial contrast extravasation

and other complications.

Three weeks after transarterial

chemoembolization (TACE), the

patient complained about a right

upper abdominal pain. This led to an

abdominal CT-Scan (Fig. 3) that

revealed ruptured necrotic mass

with associated peritonitis and

pneumoperitoneum but no active

bleeding. At this time, laboratory
test revealed stable anemia (haemoglo-

bin level: 10.9 g/dl), hypoalbumine-

mia (19 g/l), abnormal liver function
tests (ALP/GGT: 358/168 IU/L) and

elevated conjugated bilirubin level

(5.2 mg/L).

Because of the bad general state

of the patient, conservative treat-
m ent was decided with discharge

from hospital to palliative care.

Unfortunately, the patient died
two months after TACE procedure.

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Transarterial chemoembolization (TACE) is an efficient palliative well accepted treatment for unresectable HCC (3, 5, 6). In the presence of multiple HCC nodules, TACE remains the treatment of choice (7). TACE combines the effect of targeted chemotherapy with the effect of ischemic necrosis induced by arterial embolization (8). The basic principles of the procedure consist of a reduction of hepatic arterial blood supply to the tumor as well as the delivery of cytostatic agents (Adriamycin, Cisplatin, or Doxorubicin) directly into the tumor. It is well known that HCC is hypervascularised (with a high propensity for vascular invasion and growth factor produce) and that the hypervascularisation is mostly dependent on the hepatic artery and its branches (9).

The survival benefit of this treatment is confirmed by two meta-analyses (10, 11) and two recent randomized controlled trials (4, 12) that allowed showing a significant higher survival rate compared to a group of best supportive care after three years. However its benefice appears only in selected patients with unresectable HCC and preserved liver function. Tumor sizes, hypovascularity on imaging and elevated INR are predictors of increased mortality after TACE therapy for HCC (13). Contraindications for TACE (19) include portal vein thrombosis, significant arteriovenous shunting and poor liver function (Child-Pugh class C).

Imaging techniques and correct anatomical evaluation is essential to select those patients who may potentially benefit from the procedure. CT or MR examinations should be done prior to TACE (8). Although mean survival rates of 12 months (13) have been reported, a variety of complications have been described after TACE with significant morbidity. These complications are more often benign and include postembolization syndrome (fever, abdominal pain, nausea, and vomiting), impaired liver function, and leukocytopenia (3, 5, 14). However major complications are described. Liver failure, as well as liver abscess, splenic infarction,
upper gastrointestinal bleeding, bile duct complications, acalculus cholecystitis, pulmonary embolism, spasm or occlusion of hepatic artery and acute renal failure are associated with significant morbidity and mortality.

Rupture following TACE is uncommon and represents less than 1% of all complications (15) but it is probably the most important complication of TACE with an extremely poor prognosis (1). The mortality and morbidity rate is high because the patients usually suffer from an advanced disease.

The mechanism of rupture of HCC after TACE is unclear. It is probably to be related to tumor and capsular necrosis and increased pressure inside the friable tumor after TACE. Secondary infection, vascular injury during TACE or inflammation secondary to the chemotherapeutic agents could play a role too (1). They can appear especially when there is no tumor capsule or when the lesion is located adjacent to the Glissonian liver capsule (16). Two series from Asia conclude that most patients with complications after TACE had pre-existing risk factors as large tumor size, or extracapsular extension of the tumor (15, 17).

Patients with ruptured hepatocellular carcinoma present right upper abdominal pain and abdominal distension and the diagnosis is usually confirmed by US or CT-Scan. CT imaging is the most useful modality in the imaging of HCC (18) and can detect most of complications following TACE (18). In a ruptured HCC, blood or gas (as a result of necrosis) may be seen in the lesion, around the liver or within the peritoneal cavity. Bleeding may also occasionally be seen.

Management of patients with rupture of HCC following TACE is difficult and remains controversial because patients have already been diagnosed as having inoperable tumor and poor liver function. The primary objective in the management of these patients is to control potential bleeding and to maintain haemodynamic parameters stable. Hemostasis can be done by surgical laparotomy, interventional or conservative methods. Battula et al (19) consider that a repeat TACE can be performed to stabilize the tumor. In our opinion, emergency embolization is an efficient haemostatic treatment in case of intra-peritoneal bleeding of a ruptured HCC. In this particular situation of our patient with a bad general health and the absence of active bleeding, TACE or embolization had to be excluded. The only left solution was conservative management.

Although TACE is generally a safe procedure, the rupture remains a potential complication. As showed in our patient, it appears to be especially important in large tumors adjacent to the liver capsule. In case of such important masses, liver rupture is a clear but relatively rare complication that may occur even in absence of TACE. This complication may appear relatively lately (several weeks) after procedure, that the reason why a precise follow-up is mandatory.

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