Pre operative radiation for icteric type hepatocellular carcinoma
A case report

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Abstract

Hepatocellular Carcinoma (HCC) is still a leading health problem worldwide, due to its correlation with HBV and HCV infection and its management which is strongly dependent on patient’s condition and tumor extension. Surgery, with liver resection or liver transplantation offer a good survival rate as a primary management of such cancer. But since liver resection must consider some aspect of liver function and tumor size, and liver transplantation was not a choice in Indonesia, many treatment modalities has been developed which can be used to overcome this problem, such as tumor ablation, transarterial chemo embolization (TACE), chemotherapy and radiotherapy. With the development of conformal radiotherapy, the hepatitis induced radiation therapy could be minimized. This paper present a case of conformal radiation therapy utilization in icteric type HCC in Dr. Cipto Mangunkusumo Hospital, Jakarta. Hepatic resection was planned for this patient. (Med J Indones 2008; 17: 255-8)

Keywords: Hepatocellular Carcinoma, icteric type, radiation therapy, conformal radiotherapy

Radiotherapy is among one of the modalities in the treatment of hepatocellular carcinoma. Its primary usage was for palliative treatment in unresectable cases, but it can also be used as a neoadjuvant treatment before liver resection. Previously, there was no documented report on the use of radiotherapy in hepatocellular carcinoma at RS Dr. Ciptomangunkusumo. We report a case of preoperative radiotherapy for icteric type hepatocellular carcinoma in our hospital in which the result was satisfactory for further liver resection.

CASE ILLUSTRATION

Male, 66 years old, with dyspepsia and jaundice but no history of previous liver diseases. He had icteric eye and skin, hepatomegaly and no sign of mass in the abdomen. The total and direct bilirubin level at admission was 15.8 mg/dl and 11.6 mg/dl respectively. The Albumin level was 3.3 g/dl, with AFP 8 ng/ml and normal Prothrombin time (14; control 13,8) with Child-Pugh B classification.
CT scan uncovered a low density mass at segment 8 of the liver measuring 81 x 119 mm that compressed the biliary radix and hepatic artery with no associated ascites nor lymph node enlargement (Fig 1A). No metastasis sign was found in the plain thorax photo. And the cytology of the liver biopsy confirmed the diagnosis of Hepatocellular Carcinoma.

The result of Trans Arterial Chemotherapy with Lipiodol and Adryamicin was unsatisfactory. We found compression of biliary radix due to liver mass at segment 4, 5 and 8, with mild dilatation of the intrahepatic biliary ducts on MRCP. Furthermore, ERCP confirmed the existence of Common Bile Duct obstruction (Fig 2).

This patient undergone Three Dimensional Conformal Radiotherapy (3D-CRT) using Linear Accelerator with the total dose of 30 Gy (2 Gy/fraction). After Radiotherapy, CT scan showed hyperdens mass at the right lobe of the liver, measuring 103 x 147 mm with no dilatation of biliary system (Fig 1B)

The general condition after radiotherapy was good, with marked decreased of jaundice and dyspepsia. The total bilirubin level and albumin was 7.85 mg/dl and 3 g/dl respectively (Fig 3). On follow up, there were no major complains and this patients was planned to undergo liver resection.

The clinical manifestations of HCC are varies among patients. Most of them came with a history of right upper quadrant pain, followed with dyspepsia, and loss of body weight. Our patient came with dyspepsia, RUQ pain and jaundice. This symptoms showed a disturbance in the liver without specifically pointed to HCC.

Based on the underlying pathophysiology, jaundice in HCC can be classified into two types: hepatocellular type and icteric type. The jaundice in icteric type is caused by obstruction of the bile ducts by the tumour. Initially, the icteric type of HCC was attributed to one of the following mechanisms: (i) a tumour may erode into a branch of the biliary tree and grow distally until it fills up the entire extrahepatic biliary tree to form a biliary tumour thrombus in the extrahepatic bile ducts; (ii) a necrotic free-floating fragment of tumour may separate from the biliary tumour thrombus and migrate distally to obstruct the common bile duct. Fragments
of tumour in the bile duct, as described by Edmonson
and Steiner, are usually fragile, fleshy and grey-white
and have the appearance of chicken fat;4 and (iii)
sometimes, bleeding from the biliary tumour thrombus
may partially or completely fill up the biliary tree with
blood clots that obstruct the biliary system.5, 4 The
reported incidence of icteric type of HCC varies from
0.5 to 13% of all patients with HCC.3

With the increasing recognition of the icteric type of
HCC, a classification with therapeutic implication is
needed. Lau et al. classified icteric type of HCC into
the extrahepatic and the intrahepatic types (Fig 4). This
classification has important therapeutic and prognostic
value as patients with extrahepatic biliary obstruction
secondary to HCC have a higher curative resection rate,
which results in a significantly improved survival rate
compared with those patients with intrahepatic biliary
obstruction.3

![Figure 4. Classification of Icteric Type HCC](Adapted from Lai ECH, Lau WY. ANZ J. Surg. 2006; 76: 631–636)

It is important to determine the underlying cause
of jaundice after establishing the diagnosis of HCC
either by using Ultrasonography, CT Scan, ERCP or
MRCP. The large mass in the liver with evidence of
marked obstruction in the biliary system confirmed the
diagnosis.3, 4

The first aspect of management is to stabilize the
patient, drain the obstructed biliary tree and/or to control
the bleeding from the tumour. The second aspect of
management is to assess the resectability of the tumour
with appropriate investigations. Determination of
resectability depends on tumor stage, hepatic functional
reserve and local standards of practice. The addition of
effective adjuvant or neoadjuvant therapy (regional or
systemic) would greatly affect survival after resection
if recurrence rates could be decreased.3

The use of radiotherapy as a palliative or neoadjuvant
treatment is mainly based on the local effect of
radiation at the tumor site, without harming the healthy
liver tissue.2 This can be adequately achieved by using
three dimensional conformal radiotherapy (3D-CRT) in
which we can adjust the dose of radiation to different
location of the liver.5 Other method of Radiation
Therapy is Fractionated Stereotactic RT which is a
relatively safe and effective local treatment for small
primary HCC and is also useful for patients who are
medically inoperable or who refuse surgery.6

The indication for 3DCRT including to eliminate the
tumor thrombi at the portal vein, obstructive jaundice,
failure of Transarterial ChemoTherapy (TACE), or in
combination with surgical resection and other treatment
modalities.7 There was a significantly improved
survival rate in patients undergone TACE and Radiation
Therapy than in TACE alone. Therefore, RT in addition
to TACE is strongly recommended for patients with an
unresectable HCC. 8, 9, 10

In this case, we used 3D-CRT with a total dose of
30 Gy according to Tokuuye et al11 (Table 1). After
radiation, the liver function normalize gradually, which
was shown by the decreased of bilirubin level to 7,85
mg/dl, compared to the initial (15,8 mg/dl) and when
we started the radiation (19,64 mg/dl).

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<thead>
<tr>
<th>Criteria</th>
<th>Field size</th>
<th>Dose</th>
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<tbody>
<tr>
<td>Child-Pugh B or C</td>
<td>&gt; 100 cm2</td>
<td>30 Gy</td>
</tr>
<tr>
<td>Child-Pugh A</td>
<td>&gt; 100 cm2</td>
<td>50 Gy</td>
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<tr>
<td>Child-Pugh A</td>
<td>&lt; 100 cm2</td>
<td>60 Gy</td>
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**CONCLUSION**

Palliation of symptoms can be achieved using radio-
therapy in certain types of HCC and thus providing a
good condition for further resection.
REFERENCES


