

Radiofrequency ablation of liver tumours with transpleurodiaphragmatic access



Ann. Ital. Chir., LXXV, 5, 2004

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Introduction

Radiofrequency thermal ablation (RFA) has increasingly been used for unresectable hepatic malignancies (1, 2). An abdominal approach is usually employed, but sometimes the tumour can be difficult to reach. A trans-thoracic access can offer the easiest way to perform the RFA of a liver tumour.

A case of transpleurodiaphragmatic RFA of a liver metastasis is reported in the paper.

Materials and methods

A 48 years old woman underwent left colectomy and chemotherapy for colon adenocarcinoma (pT3, N1, M0). After two years of disease free survival she developed liver metastases, so that she received a left hepatectomy, resection of the segment V and wedge resections (WR) of the segments VI and VIII. Six months later a resection of the segment I was performed in order to get rid of a new liver metastasis. The follow up went on and three months later a new lesion of the segment VIII measuring 20 millimetres was discovered by ultrasonography (USG) and computerised tomography (CT) scan (Fig. 1). It was decided to treat the metastasis with RFA using a transpleurodiaphragmatic access. Once induced general anaesthesia with the patients lying

Riassunto

LA TERMOABLAZIONE CON RADIOFREQUENZE DI NEOPLASIE EPATICHE MEDIANTE ACCESSO TRASPLEURODIAFRAMMATICO

La termoablazione con radiofrequenza (RFA) viene utilizzata per il trattamento di neoplasie epatiche non resecabili (1, 2). La metodica viene effettuata tramite una via di accesso addominale laparotomica, laparoscopica o percutanea. Recentemente è stato proposto l'impiego per via transpleurodiaphragmatica (8), in particolare per il trattamento di tumori situati in vicinanza del confluente cavo-sovrappatico e quindi difficili da trattare con un accesso addominale.

Una paziente con una metastasi epatica del segmento VIII è stata trattata mediante RFA in associazione ad una resezione atipica del segmento VII, entrambe eseguite per via transtoracica. Non si sono verificate complicanze intra- e post-operatorie. La paziente è stata dimessa in 5° giornata postoperatoria ed è libera da malattia neoplastica a 6 mesi di follow up.

La via transtoracica può essere considerata una efficace e sicura alternativa per effettuare la RFA di neoplasie epatiche in pazienti selezionati.

Parole chiave: Radiofrequenza, tumore del fegato, toracotomia.

Abstract

Radiofrequency thermoablation (RFA) is used to treat unresectable liver tumours (1, 2).

RFA is performed using an abdominal access (laparotomic, laparoscopic and percutaneous).

A transpleurodiaphragmatic approach has recently been proposed (8), particularly for the treatment of tumours which are placed near to inferior vein cava and hepatic veins and which are difficult to reach for an abdominal access.

A patient with a liver metastasis of the segment VIII underwent RFA with an associated wedge resection of the segment VII, both were performed with a transthoracic access. Peri- and postoperative complications did not occurred. The patient was discharged on fifth postoperative day, and she is disease free after a follow up of 6 months.

A transpleurodiaphragmatic access can be considered a safe and efficacy procedure to perform an RFA of a liver tumour in selected cases.

Key words: Radiofrequency, liver tumour, thoracotomy.

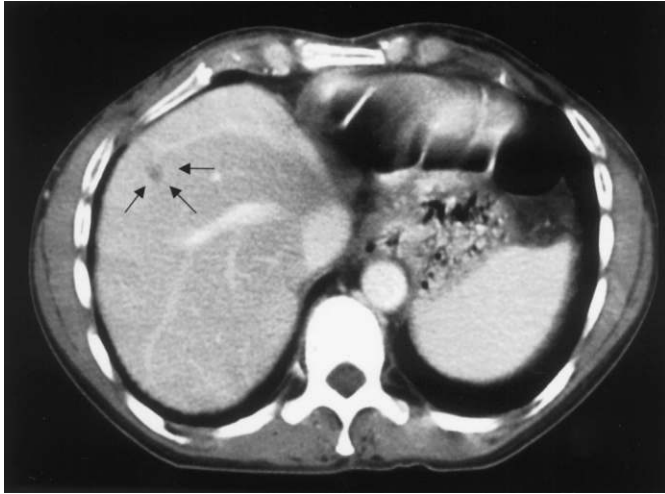


Fig. 1: CT scans showing the metastasis placed in the segment VIII (black arrows).

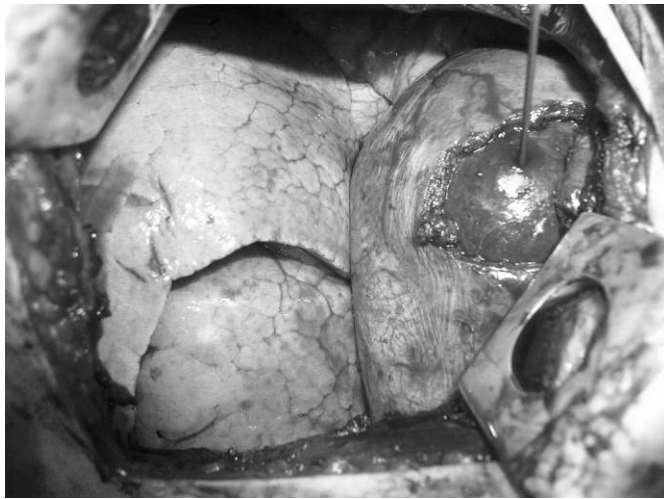


Fig. 2: Radiofrequency thermoablation using a transpleurodiaphragmatic access.

on her left side, a right anterior-lateral thoracotomy in the seventh intercostal space was performed. A Carlens tube was used in order to exclude the right lung, but it was not necessary and a low volume ventilation was enough. Intraoperative ultrasound (IOUS) detected the metastasis sited in the segment VIII, but a manual exploration of the surface of the liver detected a further small nodule measuring 10 mm. in the segment VII under the Glisson capsule. A section of the diaphragm and a wedge resection of the segment VII were performed. The metastasis of the segment VIII was treated by two RFA session, each of them lasting 12 minutes (Fig. 2). A probe with 3 centimetres exposed end (total length 20 centimetres), cooled with saline solution at 0°C (Cool Tip RF, Radionics®, Burlington, Massachusetts, USA) and a 480 kHz radiofrequency generator (CC1 Cosman

Coagulator System, Radionics®, Burlington, Massachusetts, USA) were used. Tissue impedance, generator power output and electrode tip temperature were controlled during the procedure. RFA effects on the metastasis were monitored by IOUS which showed an increasing iperechogenic area. The diaphragm was closed with a running suture and a chest tube was left in place.

Results

Operating time was 90 minutes, blood loss was 50 millilitres. There were no postoperative complications and the patient was discharged on fifth postoperative day. A CT scan was obtained one month later and showed the area treated by RFA as a zone of hypodensity. Follow up is lasting six months and the patients is alive and disease free.

Discussion

Radiofrequency thermal ablation (RFA) is a technique for treatment of liver tumours which cannot be managed with surgery (1, 2). RFA is often performed percutaneously, thanks to the less invasivity and to the possibility of repeat it (3). Intraoperative RFA via laparotomy has been developed to increase the rate of curative liver resections through a better staging by IOUS, to perform the Pringle maneuver thus increasing RFA efficacy and to mobilise and isolate the liver from adjacent organs getting better access to difficult sited lesions (4, 5). Recently a laparoscopic approach has been introduced and it is a good compromise between low invasivity and the control of the abdominal cavity (6, 7). Even if there are lots of options for RFA, some liver tumours are difficult to reach because of the high sited position, mainly the segments VII and VIII and the close position to the inferior vein cava (IVC) and hepatic veins. The abdominal access to the liver is worsened in case of repeated laparotomies, because of the great number of adhesencies. Elias et al. proposed a transpleurodiaphragmatic approach to perform RFA of a liver metastasis (8). The same access has also been reported to perform a liver resection (9). The purpose is to treat high sited lesions using the straightest access, that is in this case a right thoracotomy. We treated our patient with RFA because of the relatively small sized tumour and the reduced remnant liver due to the repeated hepatectomies. The transpleurodiaphragmatic approach was decided for this tumour which was sited in the segment VIII, because a percutaneous RFA failed and we feared that a laparotomic access would have been difficult because of the site of the tumour and the presence of many adhesencies. We experienced that in such cases a trans-thoracic approach can be the safest and easiest method to perform a RFA of a liver tumour.

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