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لم ترد بالأصل

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ROLE OF TRANSCATHETER ARTERIAL MO-EMBOLIZATION AND PERCUTANEOUS THANOL INJECTION IN TREATMENT OF HEPATOCELLULAR CARCINOMA

Thesis

Submitted for partial fulfillment of the requirements of the MD degree in

"Radiodiagnosis"

By

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(M.B.,B.Ch., M.S.C.B. (Radiodiagnosis)

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FACULTY OF MEDICINE
TANTA UNIVERSITY
2003

بسم الله الرحمن الرحيم

(سنريهم آياتنا في الآفاق وفي أنفسهم حتى يتبين لهم أنه
الحق، أولم يكف بربك أنه
على كل شيء شهيد)

(سورة فصلت: الآية ٥٣)

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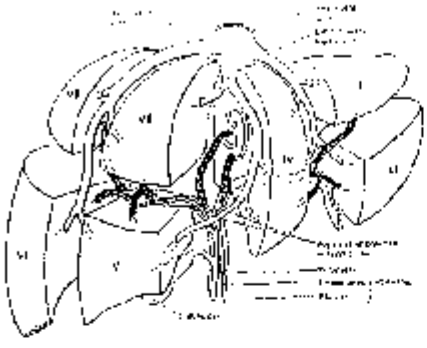
CONTENTS

Abbreviations

HCC	:	Hepatocellular carcinoma.
HBV	:	Hepatitis B virus
HCV	:	Hepatitis C virus
TNM	:	Tumor Node Metastasis
WHO	:	World health organization
AFP	:	Alpha feto protein
US	:	Ultrasonography
CT	:	Computed tomography
MRI	:	Magnetic resonance Imaging.
CTA	:	CT angiography
CTAP	:	CT arterial portography
T1WI	:	T_1 weighted image.
T2 WI	:	T_2 weighted image.
Gd-DTPA	:	Gadolinium Di-ethylene triamine penta acitic acid dimeglumine
T12	:	Thoracic 12
L1	:	Lumbar 1
AUC	:	Area under the drug concentrate
ATPase	:	Adenosine triphosphatase
IBCA	:	Isobutyl-2- cyanoacrylate
PVA	:	Polyvinyl alcohol.
PEI	:	Percutaneous ethanol injection
TACE	:	Transcatheter arterial chemoembolization
A-V shunt	:	Arterio-venous shunts.
Lipiodol UF	:	Lipiodol ultra fluid.
Nd YAG	:	Neodymium yttrium aluminum garent.
SGOT	:	Serum glutamic oxalacetic transaminase
SGPT	:	Serum glutamic pyruvic transaminase.



INTRODUCTION

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Hepatocellular carcinoma (HCC) is the seventh and ninth most common form of cancer in men and women respectively in the world [Tanaka et al 1992][1].

With the advance of imaging and surgical techniques, the number of patients undergoing partial hepatectomies for liver tumours has significantly increased during the past decade [Lai et al 1995][2] . Improvements in imaging modalities have contributed to the early detection, precise localization and characterization of liver lesions [Tan et al 1995] [3] .

Nevertheless, in many patients with liver tumours, surgery is not an appropriate option. Patients with primary hepatocellular carcinoma are often poor surgical candidates because of the lack of hepatic reserve resulting from coexisting liver cirrhosis or the presence of multiple lesions at the time of the diagnosis [Colombo et al 1991] [4] .

Non-surgical ablation of HCC can now be achieved owing to new techniques of interventional radiology. Many imaging guided procedures that offer alternatives to surgery have been developed in the past few years and have gained an increasingly important role in the treatment of HCC. [Bartolozzi and Lencioni 1996] [5].

Two fundamental methods of tissue destruction have been used for non-surgical ablation of HCC: percutaneous ethanol injection (PEI) and transcatheter arterial chemo-embolization (TACE) [Revandiy and Chezmar 1993][6].

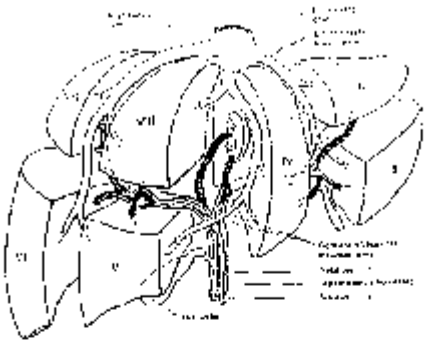
Percutaneous ethanol injection has recently been performed under ultrasound guidance. It has been shown to be highly effective when it is restricted to lesions smaller than 3cm [Livraghi et al 1988] [7].

Intratumoral injection of absolute ethanol causes extensive coagulative necrosis of the tumor cells and usually does not damage non cancerous liver parenchyma [Shiina et al 1993] [8].

Large HCC (> 3 cm in diameter) have been widely treated with transcatheter arterial chemoembolization by using various combinations of chemotherapeutic drugs and embolic agents .The standard treatment protocol adopted in many institutions includes intraarterial injections of an anticancer-in-oil emulsion and gelatin sponge particles [Savastano et al 1994] [9].

This concept of treatment is based on the knowledge that the liver tumor receives virtually all of its blood supply from the hepatic artery. So, when the chemotherapeutic agent is injected into the artery, there is a selective concentration of the drug within the tumor, augmented by the marked difference between the tissue clearance of lipiodol in normal liver and its clearance in hepatocellular carcinoma. Therefore, TACE of HCC has gained its popularity [Melvin et al 1992] [10].

A combined therapeutic approach, consisting of TACE followed by PEI has recently been proposed. In large HCC (> 3 cm in diameter) previously submitted to TACE, tumor consistency is markedly decreased and intratumoral septa are usually disrupted; as a result of the necrotic phenomena induced by TACE [Higuchi et al 1994][11]. These histopathological changes make subsequent treatment with PEI easier, as they provide enhanced ethanol diffusion within the tumor mass. Consequently, higher doses of ethanol with respect to those used in conventional PEI can be injected, enabling complete and homogenous perfusion even of large lesions. Moreover, treatment with PEI is facilitated by the TACE-derived fibrous wall around the lesions, which favors a longer retention of the injected ethanol within the tumor [Bartolozzi et al 1995] [12].



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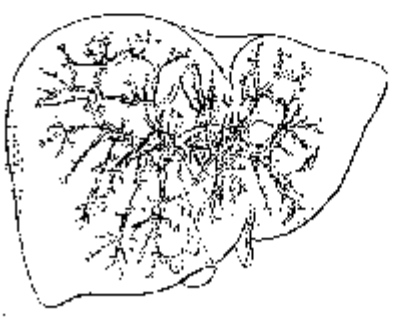

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The aim of this work is to study the value of percutaneous ethanol injection and transcatheter arterial chemoembolization as interventional procedures used in the treatment of hepatocellular carcinoma.