



شبكة المعلومات الجامعية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ





شبكة المعلومات الجامعية



شبكة المعلومات الجامعية

التوثيق الالكتروني والميكرو فيلم



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكرو فيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
على هذه الأفلام قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %



شبكة المعلومات الجامعية



بالرسالة صفحات

لم ترد بالأصل



شبكة المعلومات الجامعية



بعض الوثائق

الأصلية تالفة

**AN EVALUATION OF THE TREATMENT OF HEPATIC
TUMORS USING ULTRASONOGRAPHY GUIDED
INTRALESIONAL INJECTION OF ETHANOL**

Thesis

Submitted in Partial Fulfillment for

M.D. Degree in

GENERAL SURGERY

Presented by

By

GEORGE MICHEL WADIE

(M.B., B. Ch & M. Sc.)

Supervised by

PROF. DR. SAMIR ABDEL HAMID GALAL

Professor of General Surgery
Faculty of Medicine, Cairo University

PROF. DR. MONIR HASSAN EL- DIDI

Professor of Pathology
National Cancer Institute, Cairo University

DR. OSSAMA SAID IMAM

Lecturer of General Surgery
Faculty of Medicine, Cairo University

Faculty of Medicine

Cairo University

2002

B
0022

محضر

اجتماع لجنة الحكم على الرسالة المقدمة من

الطبيب / جورج ميسيل وديعتوظف للحصول على درجة المجستير / الدكتوراةفي الجامعة العامة

تحت عنوان : باللغة الانجليزية : An Evaluation of the Treatment of HepaticTumors Using Ultra Sonography guided Intralcsional
Injection of Ethanol: باللغة العربية : دراسة تجريبية علاج أورام الكبد الانواع والانسويةعاطف بن حقيق الورم بالاميتانولبناءً على موافقة الجامعة بتاريخ / / ١٩ تم تشكيل لجنة الفحص والمناقشة للرسالة
المذكورة أعلاه على النحو التالي :-(١) د. سمير عبد الحميد حلال عن الرئيسة(٢) د. سامي درويش المايه أبو الوفا متعن داخلي(٣) د. أحمد عبد خا متعن خارجي

بعد فحص الرسالة بواسطة كل عضو منفردا وكتابة تقارير منفردة لكل منهم لاعتادت اللجنة مجتمعة في

يوم ١٦ / ٥ / ٢٠٠٦ بمقر مديحبكلية الطب - جامعة القاهرة وذلك لمناقشة الطالب في جلسة علنية في موضوع الرسالة والنتائج التي توصل
اليها وكذلك الاسس العلمية التي قام عليها البحث .قرار اللجنة : قبول الرسالة

توقيعات أعضاء اللجنة :-

المعروف المتعن

د. عبد الجبار عبد الجبار

(صام)

المتعن الداخلي

د. سامي درويش المايه أبو الوفا

المتعن الخارجي

د. أحمد عبد خا

Acknowledgment

My special thanks to Professor Dr Samir GALAL who sincerely guided and thoroughly revised the whole work with patience and tolerance to my erratic presence for which I will remain eternally grateful.

I would also like to thank Professor Dr Monir ELDIDI for his professional expertise in interpreting the biopsies and his fatherly advise throughout the study.

I am deeply indebted to Dr Ossama Said IMAM who brought the idea to reality by doing the biopsies and the injections under ultrasound guidance in Department 30 left Kasr El Aini Hospital and Medical School. Many of the cases he gave it to me well documented and prepared . He taught me a lot in writing and in life.

I am also grateful to Professor Dr Hosny SALAMA Professor of Tropical Medicine, Cairo University, not only for the cases he supplied us with but also for the excellent workmanship that he taught us in doing this thesis.

Lastly, I would like to express my deep gratitude to Professor Dr Nader ABULATA who introduced the concept, supported the team and nurtured the whole study. He supplied our unit with the ultrasonography equipment used in this work, given to us by the gracious help of the Ministry of International Cooperation. In this regard we should thank Mrs Maha ESSAWI for her prompt financial aid to the Medical School.

ABSTRACT

In this study, 40 patients with unresectable hepatic tumors were treated using percutaneous ethanol injection (PEIT) to evaluate the feasibility of this modality. Patients were divided into 2 groups according to lesion size and were compared for complications, AFP levels and US and CT changes. Results proved PEIT to be a simple, safe, less costly and less invasive alternative to surgery in cirrhotic patients. Results are superior for lesions less than 5 cm. PEIT is risky in Child C patients. Therefore, in the absence of the availability of liver transplantation, PEIT should be an available option for the treatment of hepatic tumors.

Key Words: Hepatocellular carcinoma, Percutaneous Ethanol Injection Therapy, PEIT.

TABLE OF CONTENTS

Acknowledgment.....	
List of Tables.....	II
List of Figures.....	III
List of abbreviations.....	V
Introduction and aim of the work.....	Page 1
Review of Literature:	
Anatomy of the liver.....	Page 3
Tumors and tumor like conditions of the liver.....	Page 22
The diagnosis of HCC.....	Page 54
Management of malignant hepatic lesions.....	Page 98
Percutaneous ethanol injection.....	Page 131
Patients and Methods.....	Page 173
Results.....	Page 187
Discussion.....	Page 224
Summary.....	Page 244
References.....	Page 247
Arabic summary	

LIST OF TABLES

	Page
Table 1:1 Anatomical structures useful in US	19
Table 1:2 Mean sonographic diameters	21
Table 2:1 Comparison of FNH & liver cell adenoma	26
Table 2:2 AJCC staging for HCC	38
Table 2:3 Comparison between HCC & hepatoblastoma	40
Table 2:4 Comparison between HCC & bile duct carcinoma	44
Table 3:1 Main symptoms & signs in HCC	57
Table 3:2 Paraneoplastic syndromes in HCC	62
Table 3:3 Cytomorphologic features of different HCC	97
Table 4:1 Child classification	100
Table 4:2 Modified Child score	100
Table 4:3 Okuda staging of HCC	102
Table 4:4 AJCC staging of HCC	102
Table 4:5 Results of HR in noncirrhotics	108
Table 4:6 Results of HR in cirrhotics	109
Table 4:7 Results of OLT in HCC	113
Table 4:8 Comparison of TAE with systemic chemotherapy	123
Table 4:9 Laboratory data following single-session PEIT	150
Table 4:10 Survival rates for PEIT	165
Table 4:11 Variations between studies on PEIT	166
Table 4:12 Outcomes of different therapies for single HCC	167
Table 4:13 Recurrence rates of HCC after PEIT	169
Table 6:1 Results of laboratory studies	190
Table 6:2 Site of lesions on US	192
Table 6:3 Findings on US	192
Table 6:4 Alcohol injection protocol	194
Table 6:5 Percent complications	197
Table 6:6 Characteristics of new lesions	200
Table 6:7 AFP changes in both groups	201
Table 6:8 AFP change in both groups	202
Table 6:9 Average size before and after injection	203
Table 6:10 US changes in both groups	203
Table 6:11 Effect of Child class on outcome	207
Table 6:12 Effect of pretreatment AFP level on outcome	209
Table 6:13 Effect of AFP in group I	212
Table 6:14 Effect of AFP in group II	212
Table 6:15 Effect of completion of estimated volume on outcome	213
Table 6:16 Effect of completion of injection in group I	215
Table 6:17 Effect of completion of injection in group II	215
Table 6:18 Correlation of % loss of enhancement with outcome in group I	216
Table 6:19 Correlation of % loss of enhancement with outcome in group II	217

LIST OF FIGURES

	Page
Figure 1:1 Visceral surface of the liver	3
Figure 1:2 Liver segments	7
Figure 1:3 Functional anatomy of the liver	11
Figure 1:4 Definitions of hepatectomies	12
Figure 1:5 Liver US, transverse section	15
Figure 1:6 Needle trajectory in PEIT	15
Figure 1:7 Liver US, sagittal section	16
Figure 1:8 Needle trajectory in PEIT	16
Figure 2:1 HCC gross features	29
Figure 2:2 HCC microscopic features	30
Figure 2:3 Fibrolamellar carcinoma, microscopy	33
Figure 3:1 Small HCC on CT	69
Figure 3:2 HCC on MRI	70
Figure 3:3 Transverse scans of liver by US	77
Figure 3:4 Large HCC on US	81
Figure 3:5 HCC: multinodular	81
Figure 3:6 Metastatic disease	86
Figure 3:7 The Biosponder needle	87
Figure 3:8 The biopsy procedure	92
Figure 3:9 Direct smearing	92
Figure 5:1 The study population	171
Figure 5:2 HCC work-up data sheet	184
Figure 6:1 Gender distribution in the study	185
Figure 6:2 Mean age in the 2 groups	186
Figure 6:3 Symptoms in group I	186
Figure 6:4 Symptoms in group II	187
Figure 6:5 Physical findings in both groups	187
Figure 6:6 Laboratory findings in both groups	188
Figure 6:7 Child class distribution	189
Figure 6:8 US findings	191
Figure 6:9 Alcohol injection protocol	193
Figure 6:10 Complications in both groups	195
Figure 6:11 Characteristics of new lesions	198
Figure 6:12 AFP changes in both groups	199
Figure 6:13 AFP change	200
Figure 6:14 Diameter change	201
Figure 6:15 US changes in both groups	202
Figure 6:16 % decrease enhancement	203
Figure 6:17 % necrosis on FNAC	204
Figure 6:18 Number who achieved 100% necrosis	204
Figure 6:19 Effect of Child class on outcome	207
Figure 6:20 Effect of pretreatment AFP on outcome	209

Figure 6:21 Outcome related to percent volume injected	211
Figure 6:22 Effect of loss of enhance on outcome group I	214
Figure 6:23 Effect of loss of enhance on outcome group II	215
Figure 6:24 Small lesion infiltrated with alcohol (p 1I)	216
Figure 6:25 Tip of needle in lesion (p 20II)	216
Figure 6:26 Change of echogenicity (p 20II)	216
Figure 6:27 Whole lesion infiltration (p 20II)	216
Figure 6:28 Lesion at follow-up (p 20II)	216
Figure 6:29 CT at follow-up (p 20II)	216
Figure 6:30 Tip of needle at depth of lesion (p 3II)	217
Figure 6:31 Beginning of alcohol injection (p 3II)	217
Figure 6:32 Change of echogenicity (p 3II)	217
Figure 6:33 Session starting at the depth lesion (p 3II)	217
Figure 6:34 Mottled lesion at follow-up (p 3II)	217
Figure 6:35 Pre-injection CT (p 3II)	217
Figure 6:36 Post-injection CT (p 3II)	218
Figure 6:37 Change of echogenicity with PEIT (p 9II)	218
Figure 6:38 Whole lesion pooled with alcohol (p 9II)	218
Figure 6:39 Pre-injection CT (p 9II)	218
Figure 6:40 Post-injection CT (p 9II)	218
Figure 6:41 Magnified view of needle (p 17II)	218
Figure 6:42 Small superficial lesion (p 15I)	219
Figure 6:43 CT of lesion after PEIT (p 15I)	219
Figure 6:44 Large HCC (p 7II)	219
Figure 6:45 CT of lesion prior to PEIT (p 7II)	219
Figure 6:46 CT of same lesion after PEIT (p 7II)	219
Figure 6:47 FNAC of HCC	220
Figure 6:48 FNAC of HCC	220
Figure 6:49 FNAC of HCC	220

LIST OF ABBREVIATIONS

AFP: Alfa feto protein.
AJCC: American Joint Committee for Cancer.
ALT: Alanine aminotransferase.
ANA: Antinuclear antibodies.
AP: Alkaline phosphatase.
AST: Aspartate aminotransferase.
ATP: Adenosine triphosphate.
A-V: Arteriovenous.
BUN: Blood urea nitrogen.
CA-125: Carcinoma antigen-125.
Ca19-9: Carcinoma antigen 19-9.
CA50: Carcinoma antigen 50.
CAH: Chronic active hepatitis.
CBC: Complete blood count.
CEA: Carcino embryonic antigen.
CT: Computerized tomography.
CXR: Chest X-ray.
D bilirubin: Direct bilirubin.
DIC: Disseminated intravascular coagulation.
DNA: Deoxy-ribonucleic acid.
DU-PAN2: Ductal pancreatic antigen 2.
EBV: Epstein Barr virus.
ERCP: Endoscopic retrograde cholangio-pancreatography.
ET: Endothelins.
FNAB: Fine needle aspiration biopsy.
FNAC: Fine needle aspiration cytology.
FNH: Focal nodular hyperplasia.
FUDR: Fluorouracil 2-deoxyuridine.
GB: Gall bladder.
GIT: Gastrointestinal tract.
HBV: Hepatitis B virus.
HCC: Hepatocellular carcinoma.
HCG: Human chorionic gonadotropin.
HCV: Hepatitis C virus.
HIV: Human immuno deficiency virus.
HM: Hepatic metastases.
HR: Hepatic resection.
ICG: Indocyanine green.
IGF: Insulin growth factor.
IHBD: Intra-hepatic bile ducts.
INR: International normalized ratio.

IV: Intravenous.
IVC: Inferior vena cava.
LDH: Lactate dehydrogenase.
LEI: Laparoscopic ethanol injection.
LHV: Left hepatic vein.
LMW: Low molecular weight.
LPV: Left portal vein.
MEGX: Monoethylglycinexylidide.
MGG: May-Grunwald Giemsa.
MHV: Middle hepatic vein.
MPT: Mitochondrial permeability transition.
MRI: Magnetic resonance imaging.
mRNA: Messenger ribonucleic acid.
NSAIDs: Non-steroidal anti-inflammatory drugs.
OLT: Orthotopic liver transplantation.
PAS: Periodic acid Schiff.
PEIT: Percutaneous ethanol injection therapy.
PIVKA-II: Protein induced by absence of vitamin K or by antagonist II.
PT: Prothrombine time.
PTT: Partial thromboplastin time.
PV: Portal vein.
PVC: Polyvinyl chloride.
RHV: Right hepatic vein.
RPV: Right portal vein.
SMA: Superior mesenteric artery.
SMV: Superior mesenteric vein.
T bilirubin: Total bilirubin.
TAE: Transcatheter arterial embolization.
TGC: Time gain compensation.
TGF-B1: Transforming growth factor B1.
TNF- α : Tumor necrosis factor- α .
UNOS: United Network for Organ Sharing.
US. Ultrasonography.