Management of Hepatocellular carcinoma in cirrhotic patients

Essay

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List of Abbreviations

AFB1	Aflatoxin -B1
ALT	Alanine transaminase
ALD	Alcohol liver disease
ALP	Alkaline phosphatase
AFP	Alpha feto protein
AJCC	American joint committee on cancer
AST	Aspartate transamin
ATH	Auto –immune hepatitis
BClC	Barcelona clinic liver cancer
BC	Biliary complications
ClIP	Cancer of the liver Italian Program
CEA	Carcino- embryonic antigen
CT	Computed tomography
CEMRI	Contrast- enhanced MRI
CSE	Contrast spin echo
CECT	Contrast-enhanced CT
DGCP	Des – gamma carboxy prothrombin
DSA	Digital subtraction angiography
DPD	Dihydropyrimidine hydrogenase
DNA	Dinuclic acid
M	Distant metastasis
FNA	Fine needle aspiration
FNAC	Fine Needle aspiration cytology
FNB	Fine needle biopsy
18 F- FDG	Fluorine – 18 fluorodeoxy glucose
FNH	Focal nodular hyperplasia

FLR	Future liver remnant
GD- DTPA	Gadolinium diethylene triamine Pentaacetic acid
GD – EOP – DTPA	Gadolinium ethoxy benzl diethylene Triamine pentaacetic acid
GPC- 3	Glypican – 3
HSEC	Hepatic sinusoidal endothelial cell
HBsAg	Hepatitis B surface antigene
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HCC	Hepatocellular carcinoma
HCFU	Hexyl carbamoyl -5-fluorouracil
ICG	Indocyanine green
IVC	Inferior vena cava
ICU	Intencive care unit
INR	International normalize ratio
ILC	Interstitial laser coagulation
MRNs	Macro-regenerative nodule
MRI	Magnetic Resonance imaging
MTC	Metastatic tumor cryosurgery
MTC	Microwave tissue coagulation
MDRG	Multi-drug resistance gene
NCB	Needle core biopsy
NASH	Non alcoholic steatohepatitis
NSD	Non significant difference
NCCTG	North central cancer treatment group
OLT	Orthotopic liver transplantation

PEI	Percutaneous ethanol injection
PS	Performance status
P-gp	P-glycoprotein
PVE	Portal vein embolization
PET	Positron emission tomography
PBC	Primary biliary cirrhosis
PSC	Primary sclerosing cholangitis
TNM: T	Primary tumor
PT	Prothrombim time
RFA	Radio frequency ablation
N	Regional lymph nodes
RRs	Response rates
SE	Spin echo
SIRS	Systemic inflammatory response syndrome
^{99M}TC	Technetium
Th1	T-helper 1
TAE	Transarterial emblization
TACE	Transarterial chemo emblization
US	Ultra sound
UNOS	United networks for organ sharing
USA	United states
VEGF	Vascular endothelial growth factor
Wnt	Wingless – type

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INTRODUCTION

Hepatocellular carcinoma (HCC) is a common cancer that typically occurs in the setting of cirrhosis and chronic hepatitis virus infections.

Hepatitis B and C account for approximately 80% of cases worldwide. HCC is currently the fifth most common malignancy in men and the eighth in women worldwide; its incidence is increasing dramatically in many parts of the world *(**Snowberger, et al. 2007**)*.

The incidence of HCC has both geographic and time-dependent variation related to the prevalence of viral hepatitis in the population over recent decades ***(Durand, et al. 2007).***

All HCC occurs in the setting of cirrhosis or advanced fibrosis. Thus, any cause of liver disease that can result in cirrhosis should be considered a potential risk factor for HCC. Not surprisingly, the most common causes of cirrhosis (hepatitis B virus [HBV], HCV, and alcohol) are also the most common causes of HCC ***(Fuss, et al. 2005).***

HCC is seen less commonly, in genetic hemochromatosis, autoimmune hepatitis, primary sclerosing cholangitis, nonalcoholic fatty liver disease, alpha-1 antitrypsin deficiency, Wilson disease, primary biliary cirrhosis, and certain metabolic liver diseases ***(Ries, et al. 2008).***

Recognition of those at risk and early diagnosis by surveillance with imaging, with or without serologic testing, are extremely important ***(Krinsky and Taouli, 2006).***

AFP has been used as a serum marker for HCC for decades. In the years prior to sensitive imaging techniques، any focal lesion in a patient with cirrhosis should be suspected of being HCC. The ability of

abdominal imaging to detect HCC has improved dramatically over the last 2 decades ***(Daniele, et al. 2005).***

The role of biopsy in confirming HCC is controversial . While biopsy was often required for definitive diagnosis before the advent of more sensitive and specific imaging tests ***(Liaw, et al. 2006).***

Many highly effective and even curative therapies are now available that include resection and liver transplantation. Appropriate application of these interventions offers hope of prolonged survival to many patients with this otherwise lethal complication of liver disease ***(Colli, et al. 2006).***

Surgical resection of HCC, either partial hepatectomy or total hepatectomy with transplantation, offers the best long-term recurrence-free outcome (60%–70% 5-year survival) ***(Lopez, et al. 2006).***

Locoregional ablation refers to a variety of intervention techniques that specifically target a tumor or a tumor and surrounding tissue with a process to directly destroy the tumor. Numerous methods of ablation have been developed. Percutaneous ethanol injection utilizes direct injection of absolute ethanol into the tumor, resulting in dehydration of cells and protein degradation with coagulative necrosis of the tumor and surrounding tissue *(**Lopez, et al. 2006**)*.

Temperature-based methods, including cryoablation, laser-induced thermal ablation, or microwave thermal ablation, utilize drastic temperature changes to cause cell disruption and necrosis (**Avila, et al. 2006**).

Recently, several technological modifications of external beam radiation have allowed delivery of tumoricidal radiation doses the most popular methods of locoregional ablation are radiofrequency ablation

(RFA) and transarterial chemoembolization (TACE) ***(Sutherland, et al. 2005)***.

Most HCC tumours are highly vascular with rich blood supply making transarterial chemoembolization an attractive therapeutic option ***(Sangiovanni, et al. 2006).***

Aim of the work

To review different modalities of management of hepatocellular carcinoma in cirrhotic patients

ANATOMY

Gross anatomy of the liver:

The liver can be described according to different aspects:

1. Morphological anatomy:
2. Functional or surgical anatomy:

Morphological anatomy:

The liver is the largest gland in the body, weighs approximately 1200-1500 gm and receives about 1500ml of blood per minute. The wedge-shaped organ occupies most of the right hypochondrium and epigastrium. It has two surfaces, diaphragmatic and visceral (inferior). Its upper border lies anteriorly at the level of fifth or sixth intercostal space ***(Chummy,* 1999).**

Development:

The liver develops by proliferation of cells from the blind ends of a Y shaped diverticulum which grow from the foregut into the septum transversum. The cranial part of the septum transversum becomes the pericardium and the diaphragm while the caudal part becomes the ventral mesogastrium into which the liver grows ***(Chummy,* 1999).**

Surface anatomy (of anterior surface)

1. Upper border:

A line, concave upwards, which extends from the left 5th rib in midclavicular line to the 4th right intercostal space in midclavicular line, passing by the xiphisternal joint, then continuous to the right 7th rib in

midaxillary line.

2. **Right border:**

Vertical line from right 7th to 11th ribs in midaxillary line then extends for 1/2an inch below costal margin.

3. **Inferior border:**

Oblique line which joins the ends of upper and right borders crossing the left 8th then right 9th costal margin, ***(shilla and Dolley, 1997).*** (Fig.1**)**

Surfaces of the liver:

The diaphragmatic surface is boldly convex, modulated to the undersurface of diaphragm, which separates it from pleura, lungs, pericardium and heart. It is descriptively subdivided into anterior, superior, posterior and right surfaces, which merge into one another without any clear demarcations. The inferior or (visceral) surface, is moulded to adjacent viscera and is therefore irregular in shape, it lies in contact with the abdominal part of the esophagus, the stomach, the duodenum, the right colic flexure, the right kidney and supra-renal gland, and the gall bladder. The porta hepatis, or the hilum of the liver, is found on the inferior surface and lies between the fossa for the gall bladder and the upper end of the fissure for ligamentum teres (Fig.2) ***(Chummy,*** **1999).**