

## Incidence Of Different Hepatic Lesions in Saudi Patients Using Computed Tomography

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### Abstract

Computed tomography (CT) scanning is a noninvasive medical test that helps physicians to diagnose and treat medical conditions. This study was designed with an aim to determine the incidence of different hepatic lesions in Saudi patients whom presents at the Radiology Department of King Khalid Hospital at Al-Kharj province, when the liver is investigated using CT modality. CT scanner used was Siemens Somatom Emotion. Scanner features include 70 cm aperture, 50 cm scan field and a patient table that can hold patients up to 440 pounds. Also it offers reconstructed on the fly with up to 16 images per second. Out of hundred examined samples [male to female ratio of 1.2:1] hepatic adenoma (1%) and fatty fibrotic changes (2%) were the least benign lesions detected, while hepatocellular carcinoma (HCC) was the commonest malignant lesion (34.5%) found in the samples. Metastatic liver lesions and HCC were the commonest malignant lesions detected in the livers of Saudi patients.

**Key Words:** Computed tomography, Hepato cellular carcinoma, Metastatic liver lesions

### INTRODUCTION

The liver is a large, meaty organ that sits on the right side of the belly. Weighing about 3 pounds, the liver is reddish-brown in color and feels rubbery to the touch.<sup>[1]</sup>

Among the most important liver functions are removed and excreting body wastes and hormones as well as drugs and other foreign substances, synthesizing plasma proteins, producing immune factors and removing bacteria, helping the body fight infection, producing bile to aid in digestion bile salts aid in fat digestion and absorption and storing certain vitamins, minerals, and sugars.<sup>[2]</sup> Several authors have tried to characterize liver lesions on the basis of both quantitative data and qualitative observations. However, many overlapping characteristics were shown to exist among the various neoplasms; these overlapping characteristics frequently led to a long list of differential diagnoses with a subsequent lengthy and expensive work-up for the patient.<sup>[3-5]</sup>

The incidence of hepatocellular carcinoma (HCC) is rising throughout the world.<sup>[6-7]</sup> Despite many promising treatment options, which include surgical resection, alcohol or radiofrequency ablation, chemoembolization, and liver transplantation, long term prognosis remains poor in patients with advanced disease.<sup>[8]</sup> Primary hepatocellular carcinoma (HCC) is considered to be the most common malignant tumor in Africa, Asia including the Kingdom of Saudi Arabia (KSA).<sup>[9-13]</sup>

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This is explained by the high prevalence of viral hepatitis in these areas.<sup>[14-17]</sup> The diagnosis of HCC has become increasingly frequent as a result of improved imaging methods.

This study was designed with an aim to determine the incidence of different hepatic lesions presents at the patients referred to the Radiology Department of King Khalid Hospital at Al-Kharj province, when the liver is investigated by using CT modality.

### MATERIALS AND METHODS

This retrospective cohort study was performed in the period of February 2011 to July 2012. A total of hundred consecutive patients referred to the Radiology Department of King Khalid Hospital at Al-Kharj province was recruited. After the nature of the exam was fully explained, informed consent was obtained from both the consecutively enrolled outpatient and the Radiology Department. Prior to samples scanning, a formal approval was obtained from Ethics and Scientific Committee of King Khalid Hospital.

Sample characteristics; including socio-demographic data, clinical history and physical examination findings were recorded. Patients who had no clinical evidence of abdominal complain were not included in this study. Data collected included age, gender, ethnicity, underlying medical conditions, symptoms, signs, radiological imaging (including chest radiographs, abdominal ultrasound and abdominal CT). Complications and outcome after intervention were recorded. Diagnosis of liver lesions was based on the typical appearance on CT of abdomen with clinical features consistent with the diagnosis; and/or CT-guided aspiration of pus from a hepatic lesion.

CT scanner used was Siemens Somatom Emotion 16 slice CT machine. Scanner features include 70 cm aperture, 50 cm scan

field and a patient table that can hold patients up to 440 pounds. Also the scanner offers an image reconstruction on the fly with up to 16 images per second. During scanning the patient wear comfortable, loose fitting clothing. Special preparation is needed for a CT abdomen scan, while the patient receives a contrast material that highlights the abdominal vasculature. Routine scans starts with scout view; Antero-posterior with 90 degrees central ray by using 135 kVp; 300 mA and 1.0 Sec with window width/window level of 80/30 for soft tissue

Data were initially summarized into means, standard deviations (SD); mean  $\pm$  SD and percentages in a form of comparison tables and graphs. Statistical analysis was performed using Microsoft Excel Software and the Standard Statistical Package for the Social Sciences (SPSS Inc., Chicago, IL, USA) version 15 for windows..

## RESULTS

The sample population compromised hundred consecutive patients. Their ages ranged between 18 to 80 years, with mean age $\pm$ SD of (35 $\pm$ 3.1) years. Males represent 54.6 (54.6%) of the study population, while 45.4 (45.4%) were females, with male to female ratio of (1.2:1) (Table 1). The peak age was in 29-39 years which accounted (34; 34%) cases (Table 2).

During clinical examination, fever, mild to moderate abdominal pain and weight were the most common findings, reported in (68%) patients. Hepatomegaly was present in (6%)

**Table 1: Frequency and percentage of genders**

Gender	Frequency	Percentage (%)
Males	54.6	(54.6%)
Females	45.4	(45.4%)
Total	100	(100%)

**Table 2: Distribution of patients' age**

Age ranges (Year s)	Percentage (%)	Age ranges (Mean $\pm$ SD)
18-28	(11%)	23 $\pm$ 1.4
29-39	(34%)	35 $\pm$ 3.1
40-50	(16%)	45 $\pm$ 2.7
51-61	(14%)	56 $\pm$ 2.3
62-72	(19%)	67 $\pm$ 2.4
73-83	(6%)	78 $\pm$ 1.4
Total	(100%)	35 $\pm$ 3.1

patients, while jaundice, ascites and variceal bleeding was noticed in (34%) patients only (Table 3).

**Table 3: Distribution of clinical features**

Clinical features	Percentage (%) out of 100 samples
Fever	20%
Mild to moderate abdominal pain	18%
Nausea/Vomiting	8%
Weight loss	22%
Diarrhoea	35%
Cough	11%
Shortness of breath	26%
Hepatomegally	6%
Jaundice	13%
Ascites	4%
Variceal bleeding	17%

The incidence of different liver lesions detected by CT exam in Saudi patients' presents at the area of the study are summarized in (Table 4). HCC was diagnosed with (34%), and metastatic liver lesions in (7%) of patients.

## DISCUSSION

Our study showed the majority of liver masses were malignant. This was explained by the high prevalence of hepatitis B virus (HBV) and hepatitis C virus (HCV) in this region.<sup>[14,17]</sup> Benign liver tumors are rare in our study. It showed only one case of hepatic adenoma. Primary HCC was characterized by a male predominance of 2:1 which is comparable to a previous study from Riyadh.<sup>[11,18]</sup>

The peak age of patients with HCC was 55 years, which is consistent with reports from China and Hong Kong.<sup>[12-13]</sup> The peak age of patients with HCC was 45-50 years, which is

**Table 4: Distribution of CT findings**

CT findings	Percentage (%) out of 100 samples
HCC	34%
Metastatic liver lesions	7%
Cirrhosis	4%
Fatty fibrotic changes	2%
Multiple/Solitary cystic lesions	5%
Hepatic adeno ma	1%
Hepatomegally	6%
Bile duct carcinoma	1%

Biopsy performed by CT –guided aspiration used to confirm the diagnosis of HCC, hepatic adenoma and metastatic liver lesions. Consistent with reports from China and Hong Kong.<sup>[12-13,18]</sup> In contrast, younger age groups report from Africa.<sup>[12]</sup>

Fine needle aspiration (FNA) of the liver is a safe procedure but unexpected serious complications can arise.<sup>[19,20]</sup> These complications are related to the number of passes, presence of primary HCC and the presence of more than one risk factor such as coagulo-pathy and thrombocyto-pathy.<sup>[21,22]</sup>

Our study has certain limitations, principally the small sample size when attempting to perform sub-analyses. However, this is a retrospective analysis describing the presentation of the disease and its outcome, and thus an adequate sample size was not a principal consideration when the study was conducted. However, in order to validate our findings, larger studies incorporating a greater number of patients need to be conducted, preferably in a prospective manner

#### CONCLUSION

In conclusion, HCC and metastatic liver lesions were the commonest hepatic lesions detected through the samples. A small sample size is a major limitation of the study, and therefore we encourage better reporting of this condition through a nationwide database search to further clarify the risk factors and microbiological spectrum, which in turn may influence the management and outcome of disease.

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