

## ORIGINAL RESEARCH

# Utility Of CT Scan In Evaluation Of Hepatic Masses

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### **Abstract**

**Background:** In middle age, hepatic masses are frequently seen. The present study assessed hepatic masses using CT scan.

**Materials & Methods:** 88 adult patients in age ranges 20- 60 years of either gender were subjected to CT scan. CT images were taken using Siemens 3<sup>rd</sup> generation spiral CT scan machine. A Triphasic liver CT scan was performed. Serial CT slices was taken at an interval of 5 mm.

**Results:** The age group 20- 30 years had 16 patients, 30- 40 years had 30, 40- 50 years had 32 and 50-60 years had 10. The difference was non- significant ( $P > 0.05$ ). Common hepatic masses were cholangio carcinoma in 5%, metastasis in 7%, liver abscess in 30%, hemangiomas in 5%, focal nodular hyperplasia in 13%, simple cysts in 24%, hepatocellular carcinoma in 9% and hydatid cysts in 7% cases. The difference was significant ( $P < 0.05$ ). The sensitivity of CT in detecting hepatic masses found to be 96%, specificity was 94.3%, positive predictive value (PPV) was 98.5% and negative predictive value (NPV) was 100%.

**Conclusion:** The study clearly showed that CT is a highly valuable diagnostic tool for the diagnosis of hepatic masses.

**Key words:** CT scan, cholangio carcinoma, hepatic masses

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### **Introduction**

In middle age, hepatic masses are frequently seen. When assessing lesions, a clinical examination and history may be helpful. Still, diagnosing hepatic masses is a challenging task. It stirs up a lot of debate and confusion.<sup>1,2</sup> A variety of imaging modalities, including magnetic resonance imaging and CT scanning, are used to ensure accurate and dependable evaluation. Any modality's primary goal is to diagnose both benign and malignant lesions.<sup>3</sup> Every modality has a few benefits and drawbacks. A small number of lesions might be identified by everyone, and other imaging methods might overlook them. In addition, the significance of laboratory results might not be disregarded.<sup>4</sup> The ability to accurately characterize liver masses through imaging primarily depends on knowledge of the liver's distinct phasic vascular perfusion as well as the distinctive behaviors of various lesions during multiphasic contrast imaging.<sup>5</sup> When non-invasive characterization is inconclusive, a liver biopsy becomes indispensable for the definitive diagnosis. In addition, histologic analysis and immunohistochemical evaluation of

protein biomarkers are crucial.<sup>6</sup> Making the right diagnosis of hepatic lesions is crucial to choosing the best course of action. A few factors that determine how to treat malignant masses or those that pose a high risk of cancer include the staging of the tumor and the functional state of the unaffected liver.<sup>7,8</sup> The present study assessed hepatic masses using CT scan.

### **Materials & Methods**

The present study comprised of 88 adult patients in age ranges 20- 60 years of either gender. All agreed to participate in the study with their written consent. After recording base characteristics, a careful history and clinical examination was conducted. All were subjected to CT scan. CT images were taken using Siemens 3<sup>rd</sup> generation spiral CT scan machine. A Triphasic liver CT scan was performed. Serial CT slices was taken at an interval of 5 mm. Lesions were mentioned as hyper enhancement, hypo enhancement, iso-dense and mixed enhancement pattern. Data thus found were statistically analyzed. P value less than 0.05 was considered significant.

## Results

**Table I: Distribution of cases**

Age group (years)	Number	P value
20-30	16	0.72
30-40	30	
40-50	32	
50-60	10	

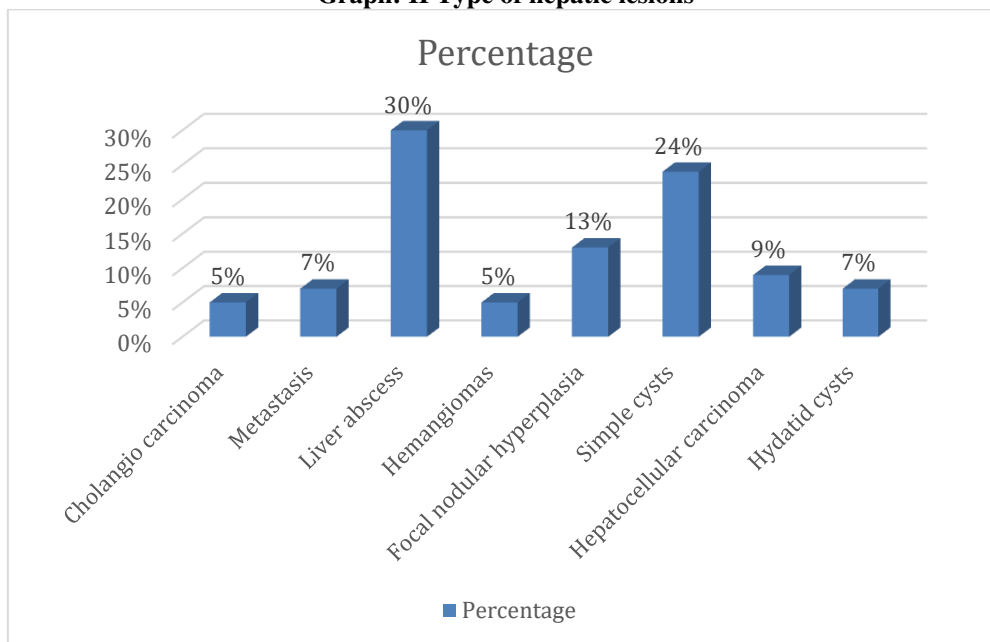
Table I: shows that age group 20- 30 years had 16 patients, 30- 40 years had 30, 40- 50 years had 32 and 50-60 years had 10. The difference was non- significant ( $P > 0.05$ ).

**Table II: Type of hepatic lesions**

Hepatic lesions	Percentage	P value
Cholangio carcinoma	5%	0.05
Metastasis	7%	
Liver abscess	30%	
Hemangiomas	5%	
Focal nodular hyperplasia	13%	
Simple cysts	24%	
Hepatocellular carcinoma	9%	
Hydatid cysts	7%	

Table II, graph I shows that common hepatic masses were cholangio carcinoma in 5%, metastasis in 7%, liver abscess in 30%, hemangiomas in 5%, focal nodular hyperplasia in 13%, simple cysts in 24%, hepatocellular carcinoma in 9% and hydatid cysts in 7% cases. The difference was significant ( $P < 0.05$ ).

**Graph: II Type of hepatic lesions**



**Table: III Efficacy of CT scan in assessment of hepatic lesions**

Efficacy	Value
Sensitivity (%)	96%
Specificity (%)	94.3%
PPV (%)	98.5%
NPV (%)	100%

Table : III shows that the sensitivity of CT in detecting hepatic masses found to be 96%, specificity was 94.3%, positive predictive value (PPV) was 98.5% and negative predictive value (NPV) was 100%.

## Discussion

Prior to the invention of helical CT, the appearance of focal liver lesions during the portal venous phase of enhancement primarily determined how they were described on a CT scan.<sup>9,10</sup> Because of their high

morbidity and mortality rate, hepatic liver masses pose a serious threat to human health. CT scanners from more recent generations have excellent diagnostic value and aid in lesion detection. It is crucial in dividing lesions into three different clinical groups.<sup>11,12</sup> Benign mass lesions fall into the first category; other benign mass lesions fall into the second, and malignant hepatic lesions fall into the third, which is always in need of treatment if at all possible. When arriving at a specific diagnosis for liver masses, it is important to take into account a number of differential diagnoses.<sup>13</sup> Those who have a history of chronic hepatitis or who exhibit signs or complications of liver cirrhosis are considered to be at risk for intrahepatic cholangiocarcinoma (IHCC) and HCC. A history of primary sclerosing cholangitis also serves as a warning sign for cholangiocarcinoma. Long-term oral contraceptive use in women increases the risk of hepatic adenoma.<sup>14,15</sup> We found that the age group 20- 30 years had 16 patients, 30- 40 years had 30, 40- 50 years had 32 and 50-60 years had 10. In 40 patients with focal hepatic masses of either gender, Gupta et al<sup>16</sup> evaluated the usefulness of computed tomography (CT) and ultrasound (USG) in the diagnosis of focal hepatic masses and compared the two modalities. The results of these assessments were correlated with histopathological and surgical findings. Five had simple cysts, one had polycystic liver, twenty-two had metastases, five had hydatid cysts, six had hemangiomas, eleven had hepatocellular livers, one had focal nodular hyperplasia, sixteen had abscesses, and one had cholangiocarcinoma. 84.38% was the sensitivity, 67.74% was the specificity, 2.62 was the positive likelihood ratio, and 0.23 was the negative likelihood ratio. For USG, the corresponding values were 100%, 97.14%, 35, and 0. We observed that common hepatic masses were cholangio carcinoma in 5%, metastasis in 7%, liver abscess in 30%, hemangiomas in 5%, focal nodular hyperplasia in 13%, simple cysts in 24%, hepatocellular carcinoma in 9% and hydatid cysts in 7% cases. The sensitivity of CT in detecting hepatic masses found to be 96%, specificity was 94.3%, positive predictive value (PPV) was 98.5% and negative predictive value (NPV) was 100%. Minami et al<sup>17</sup> in their study revealed that there were 22 cases of liver metastasis. All cases were detected by CT scan. Breast, head and neck, lung and gastrointestinal (GI) tract were common primary sites. In CT scan images, cluster sign was main feature ie. Multiple metastasis. There was variation in shape, size, growth and vascularity in metastasis cases. It was seen than 15 cases, arterial enhancement was main feature whereas 1 case showed delayed enhancement. Enhancement of wall was evident in 14 patients. Hyperdense area was found in 2 cases and hypodense in 15 cases and in 5 cases, heterogenous enhancement was seen. Target appearance was seen in 4 lesions. In 5 cases, USG incorrectly diagnosed them as pyogenic abscesses.

## Conclusion

The study clearly showed that CT is a highly valuable diagnostic tool for the diagnosis of hepatic masses.

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