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Evaluation of Focal Liver Lesions by Using Multidetector Computed Tomography

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Objectives: To evaluate the usefulness of Multidetector Computerized Tomography in detection and characterization of focal liver lesions**.**

Materials and methods:A prospective study was conducted in the Department of Radiology,GREAT EASTERN MEDICAL SCHOOL AND HOSPITAL, Srikakulam over a period of 18 months(November 2019 to May 2021) on 75 patients aged between 20-80yrs with clinically suspected focal liver lesions. They are evaluated with TriphasicMDCT GE revolution 16 sliceand the conspicuity and enhancement patterns of individual lesions after the CT examination are noted

Results: In our study, there was a male preponderance (64%) when compared to females who accounted for (36%) of cases. Most of the benign lesions were noted in females. Out of 75 patients studied, 42 patients were diagnosed to have malignant (56%) focal liver lesions and 33 patients had benign (44%) focal liver lesions.

Overall there were 13 enhancing patterns. 6 were hypo vascular enhancing patterns and 7 were hyper vascular enhancing patterns

Conclusion: Characterization of focal liver lesions based on the 13 enhancement patterns observed and correlation with standard of reference was satisfactory. The triphasic CT enhancement patterns were 100% sensitive and specific in diagnosing all cases of Abscess, Cysts and Intrahepatic CCA, however CT enhancement patterns in HCC (sensitivity-84.3%), Hemangioma (sensitivity- 93.0%), FNH (sensitivity-75%), metastases (sensitivity-97.6%) was sensitive in diagnosing most of the cases and showed 100% specificity in diagnosing in all the cases when there was typical enhancement for individual lesion concerned. Triphasic CT of liver is a standardized CTprocedure, enables in detection and characterization of vast majority of focal liver lesions, in the presence of different pathological conditions and multilevel disease.

I. INTRODUCTION

Focal liver lesions are discrete abnormality arising within liver and are increasingly being discovered with the widespread use of diagnostic imaging modalities. Differentiation of various liver lesions is considered to be critical for determining the treatment options.The differential diagnosis (malignant and non malignant lesions) in patients presenting with a focal liver lesion is broad. The high frequency of benign focal liver lesions such as Cysts, Hemangiomas, and focal nodular hyperplasia etc. make detection and characterization of these lesions essential.

Multiphasic CT has become the primary imaging modality for detection and characterization of focal liver lesions. It is an effective aid in determining the number, location, and nature of lesions and monitoring their size over time.This study is an effort to assess the role of MDCT in detection and characterization of focal liver lesions and help in deciding further course of management

Objectives:

To evaluate the usefulness of Multidetector Computerized Tomography in detection and characterization of focal liver lesions.

II. MATERIALS AND METHODS:

A prospective study was conducted in the Department of Radiology,GREAT EASTERN MEDICAL SCHOOL AND HOSPITAL, Srikakulam,Andhrapradesh over a period of 18 months(November 2019 to May 2021) on 75 patients in aged between 20-80yrs with clinically suspected focal liver lesions. They are evaluated with TriphasicMDCT(GE Revolution 16 slice) and the conspicuity and enhancement patterns of individual lesions after the CT examination are noted.

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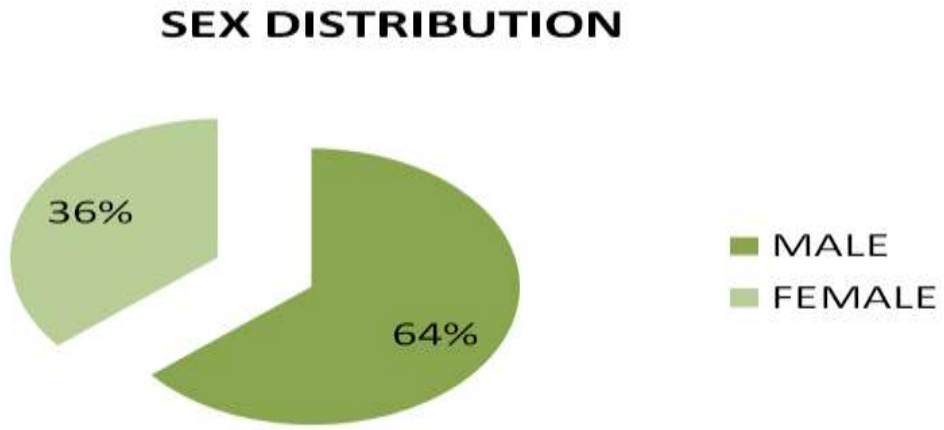
III. RESULTS:

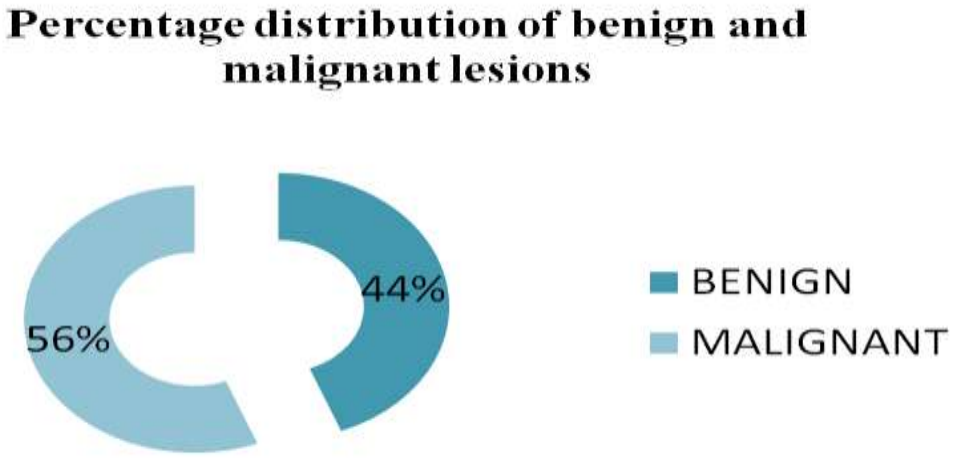
In our study, there was a male preponderance 48(64%) when compared to females who accounted for 27(36%) of cases. Most of the benign lesions were noted in females.

Of the total focal liver lesions seen in 75 patients, there were 33(44%) benign focal liver lesions and 42(56%) malignant lesions. All cases of FNH, hydatid and a case of adenoma and most of the hemangiomas(66%) are seen in females. All cases of abscess and most of the simple(75%) cysts are seen in males**.**

In our study there were 45(60%) hypo vascular lesions and 30(40%) hyper vascular lesions.Of the 45hypovascular lesions, malignant hypovascular lesions included metastases (68%)from colorectal, lung, gastric malignancies.Benignhypovascular lesions include cysts, abscess and hemangiomas.Of the 30hypervascular lesions, malignant lesions were metastases from breast, throid, rcc, leimyosarcoma, carcinoid.Benignhypervascular lesions include hemangioma, adenoma.

Overall there were 13 enhancing patterns. 6 were hypo vascular enhancing patterns and 7 were hyper vascular enhancing patterns





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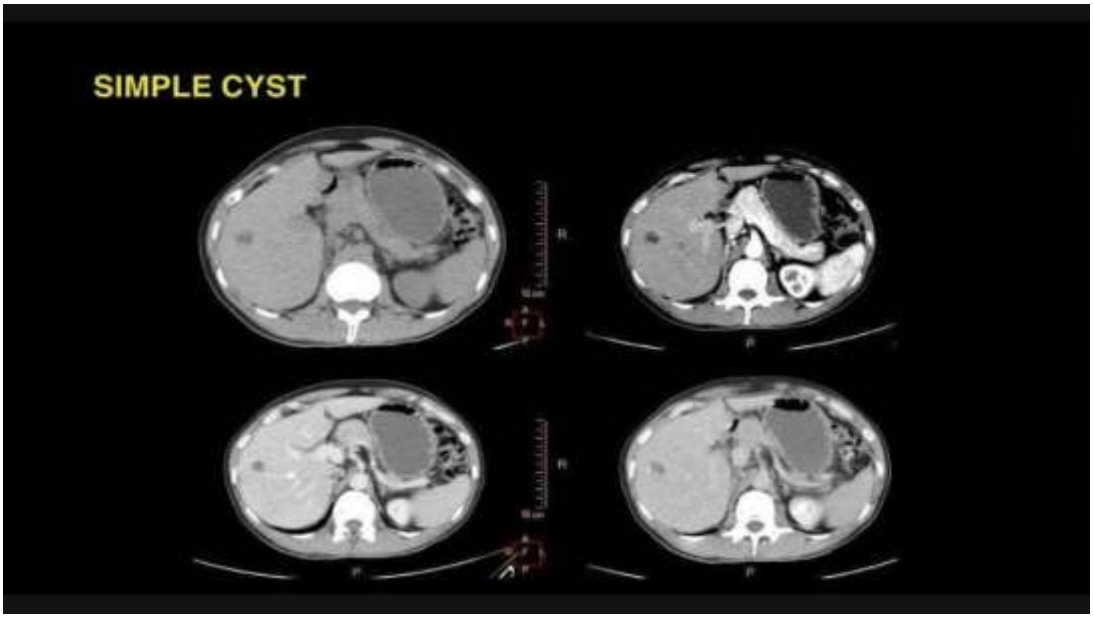
HYPOVASCULAR LESIONS	HYPOVASCULAR LESIONS	HYPERVASCULAR LESIONS	HYPERVASCULAR LESIONS
BENIGN	MALIGNANT	BENIGN	MALIGNANT
Cysts	Metastasis from	Hemangioma	Metastasis from
Abscess	Colorectal	Adenoma	Breast
Hemangioma	Lung		Thyroid
	Gastric		Kidney
			Carcinoid

IMAGING FINDINGS



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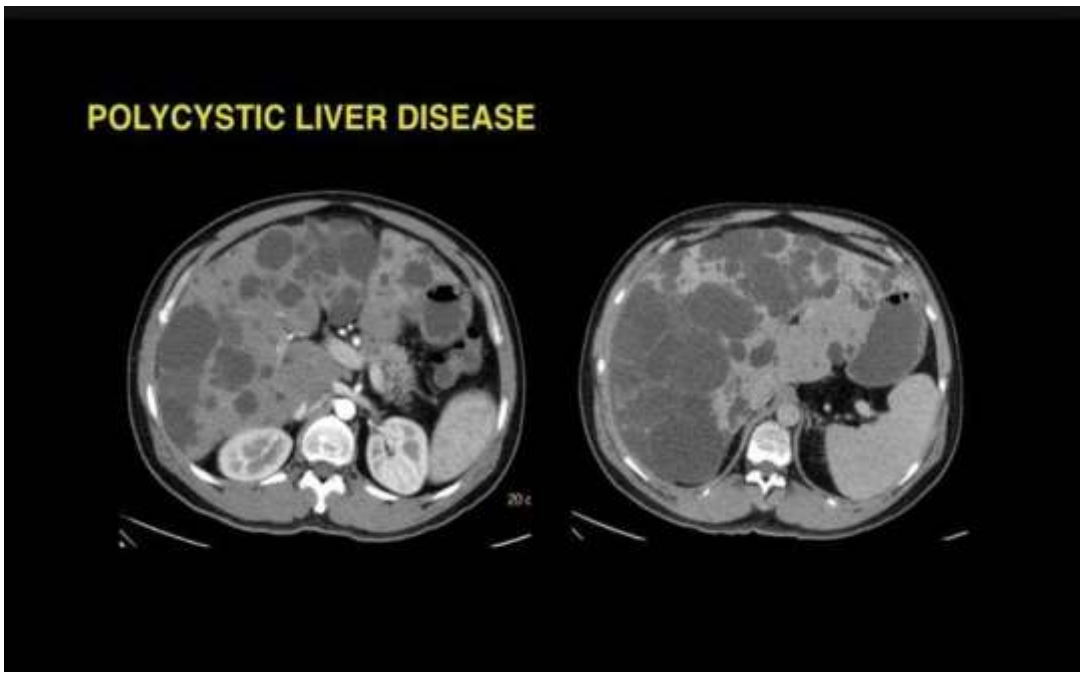

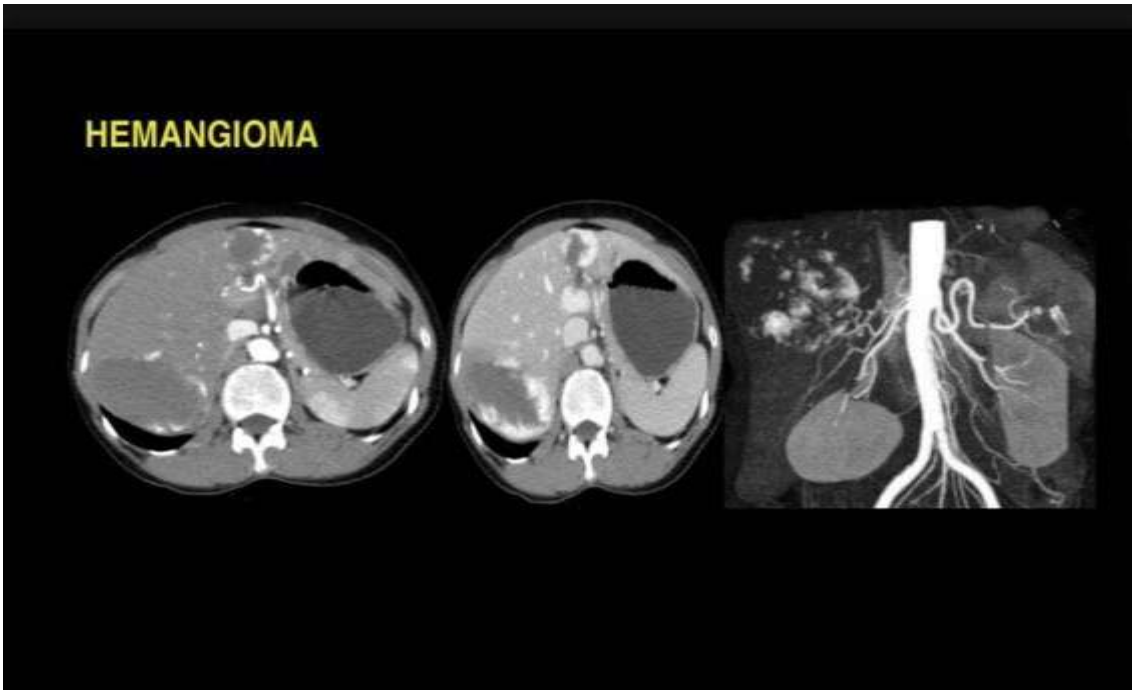

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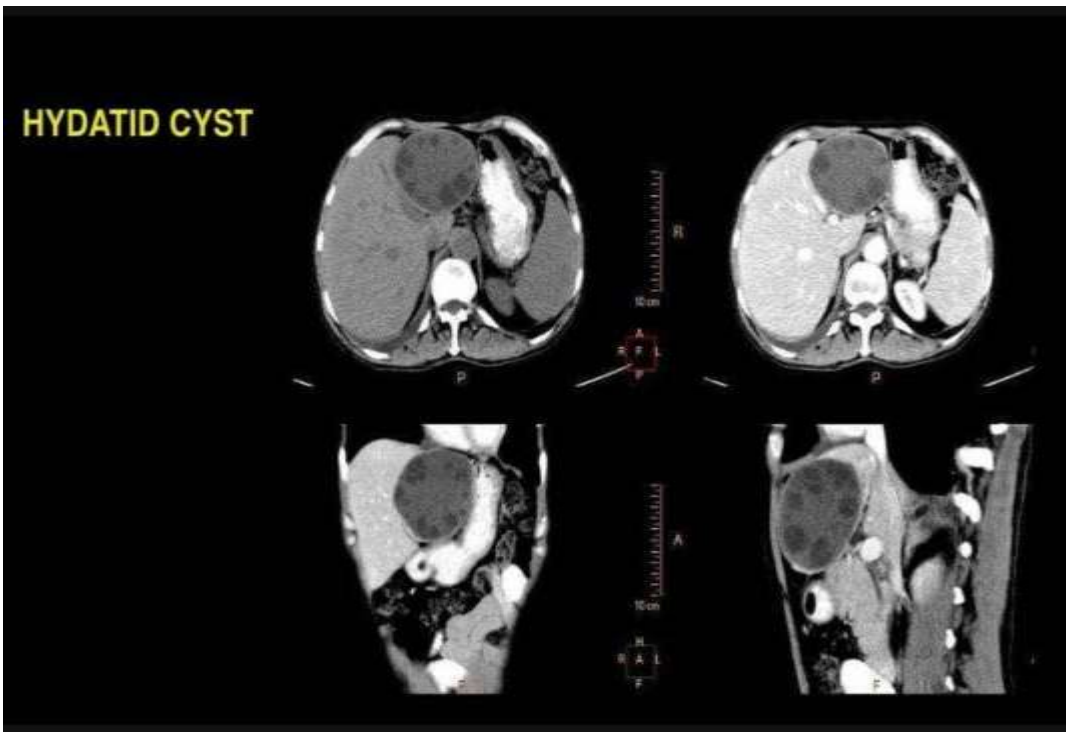

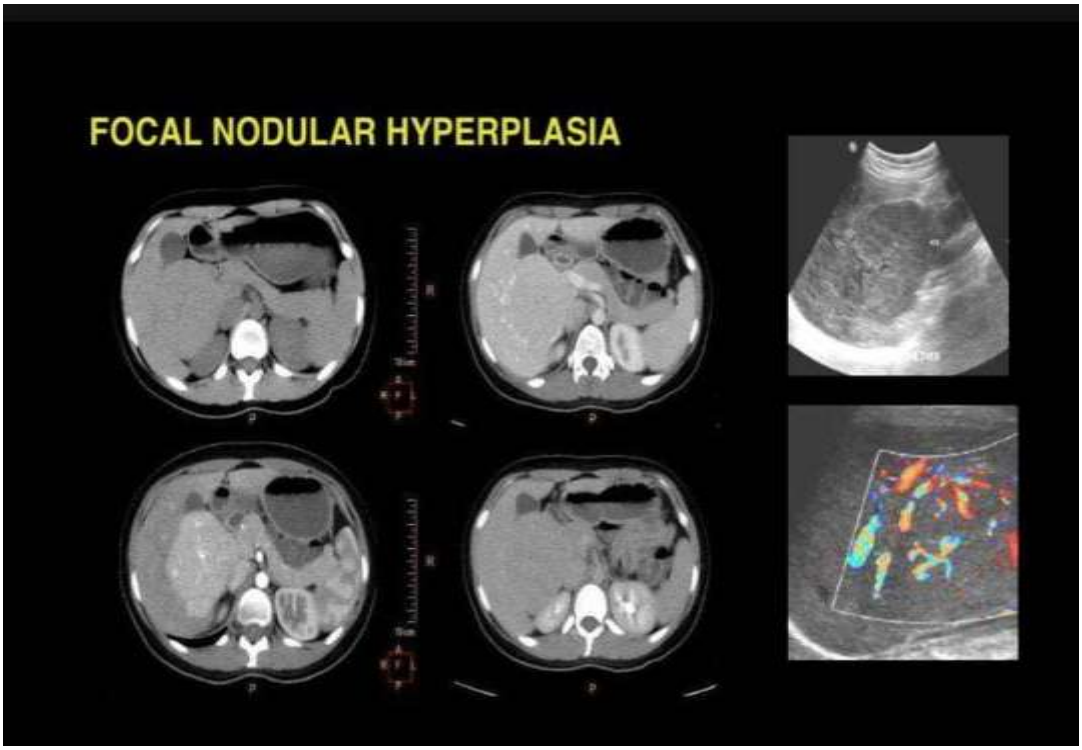

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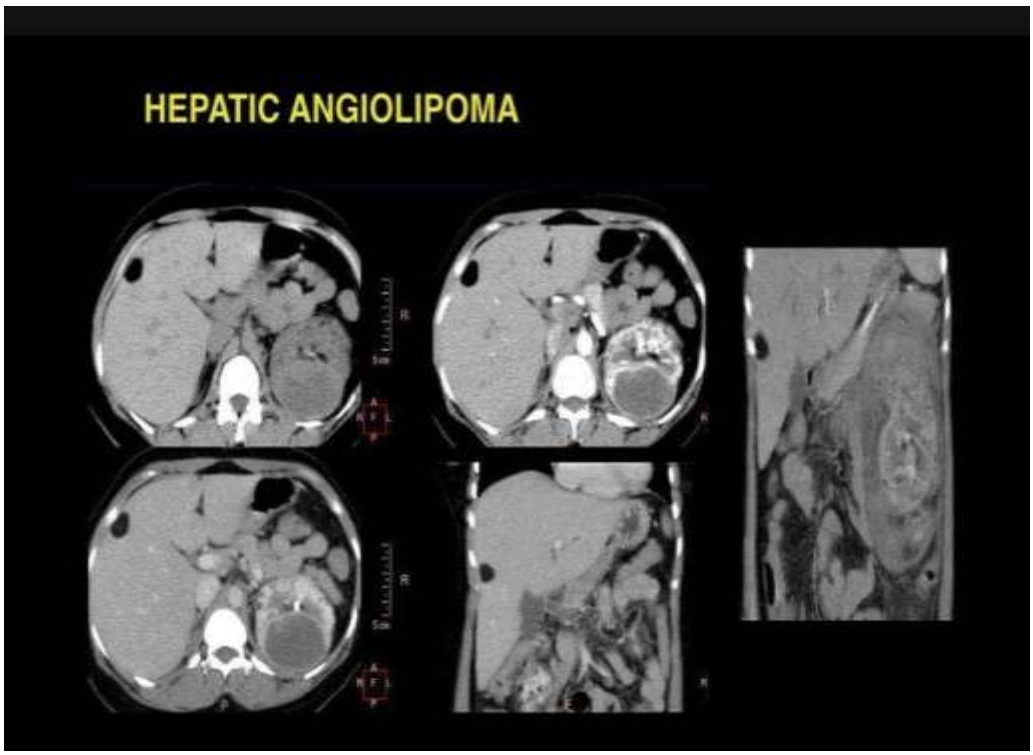
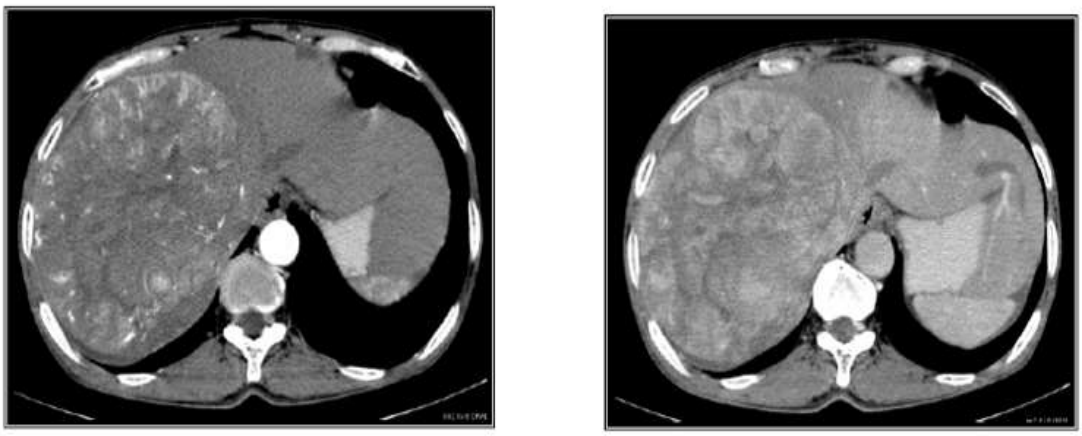


Hepato cellular carcinoma with characteristic variegated pattern of enhancement



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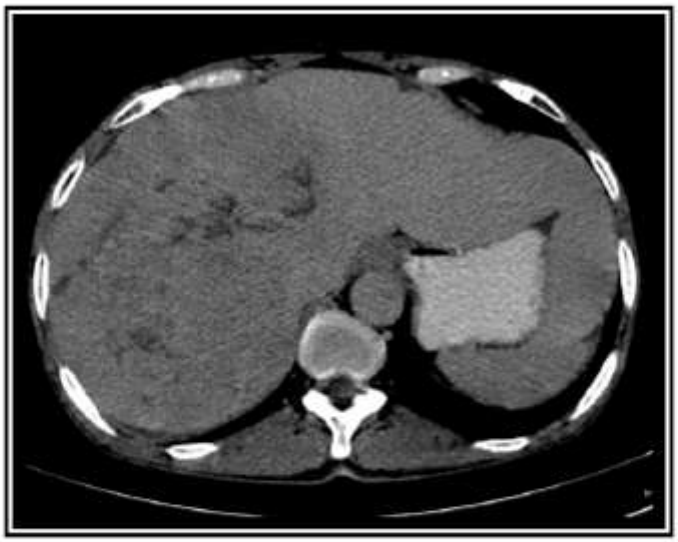
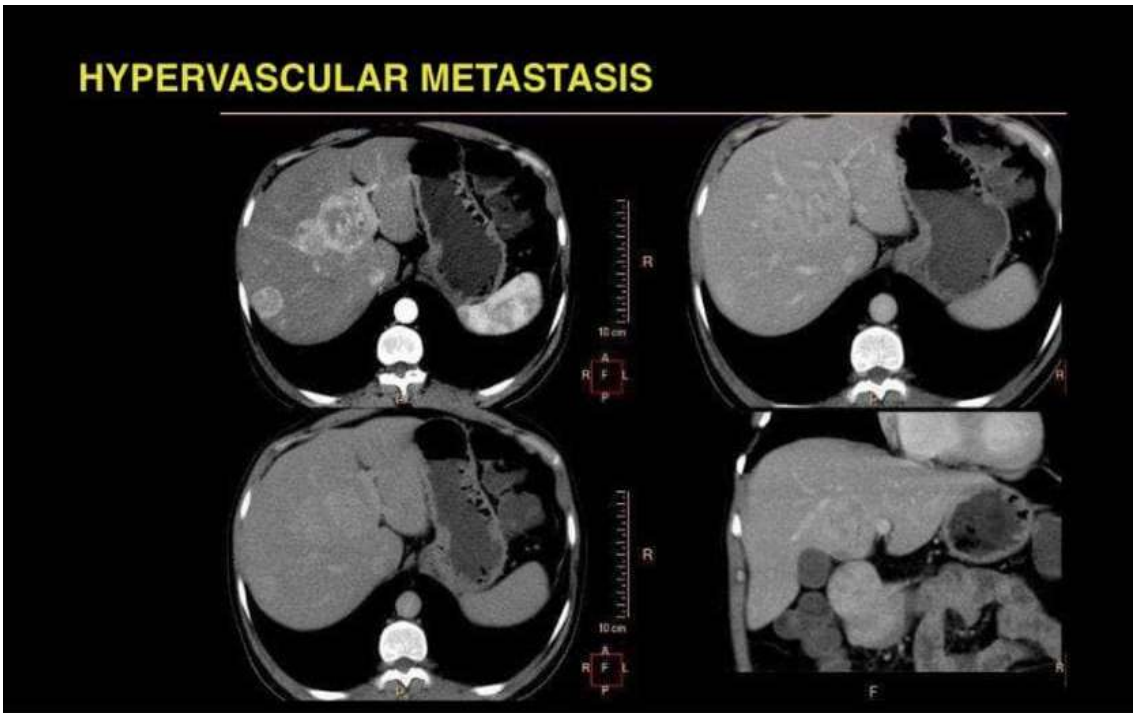


Delayed phase



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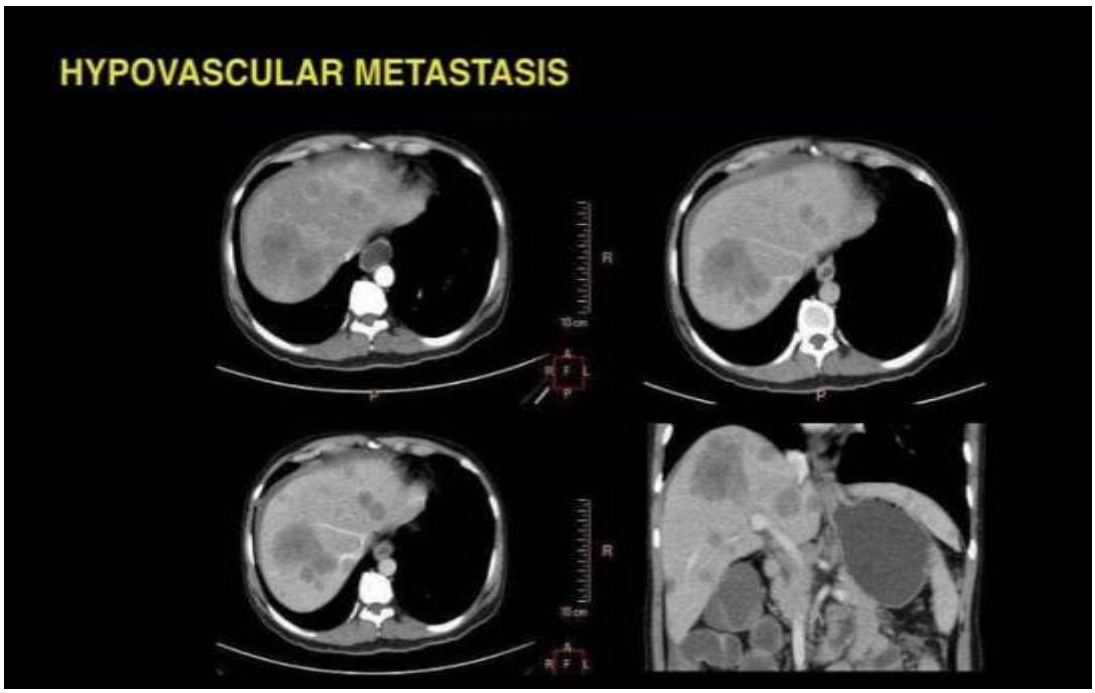
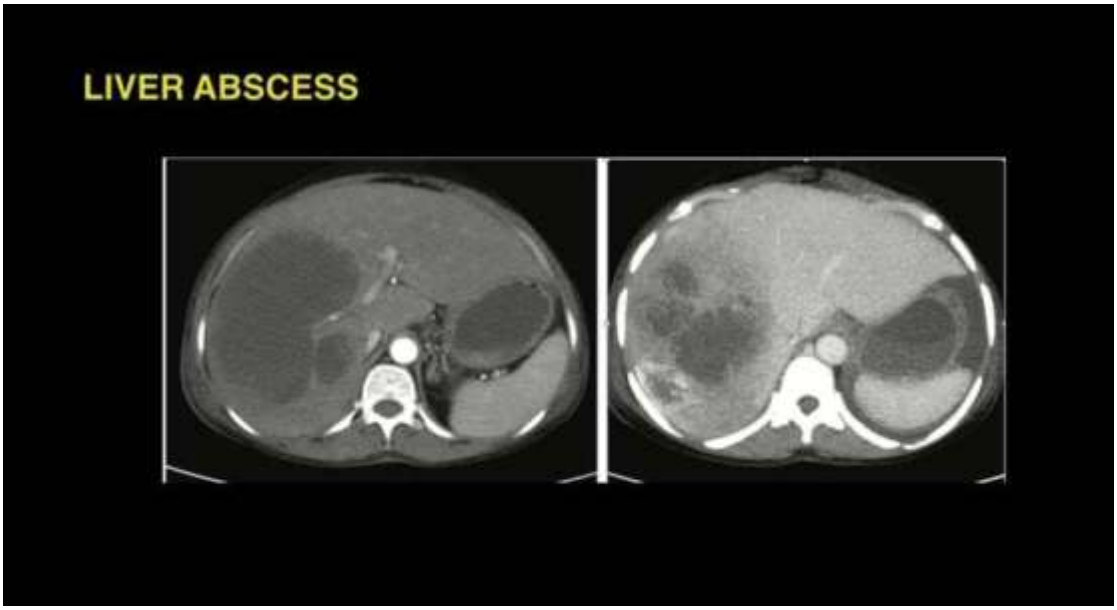


Abscess with peripheral rim enhancement in arterial phase



IV. CONCLUSION:

Characterization of focal liver lesions based on the 13 enhancement patterns is observed and correlation with standard of reference is satisfactory.Thetriphasic CT enhancement patterns were 100% sensitive and specific in diagnosing all cases of Abscess, Cysts and Intrahepatic CCA, however CT enhancement patterns in HCC (sensitivity-84.3%), Hemangioma (sensitivity-93.0%), FNH (sensitivity-75%), metastases (sensitivity-97.6%) is sensitive in diagnosing most of the cases and showed 100% specificity in diagnosing in all the cases when there is typical enhancement pattern for the individual lesion concerned.

Triphasic CT of liver is a standardized CT procedure, enables in detection and characterization of vast majority of focal liver lesions, in the presence of different pathological conditions and multilevel disease

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