

W. Dennis Foley, M.D.
Professor of Radiology
Director of Section of
Digital Imaging
Medical College of Wisconsin
Milwaukee, Wisconsin

Helical Tri-phase Liver

Patient has chronic hepatitis and suspected hemochromatosis. CT study was performed to evaluate for possible hepatoma. The examination was performed using a triple pass technique as follows:

- ◆ First pass (image thickness/table speed) 2.5/15 mm
- ◆ Second pass (image thickness/table speed) 5/15 Q
- ◆ Third pass (image thickness/table speed) 5/22.5



Helical Tri-phase Liver



First pass is obtained at aortic peak plus 10 sec, second pass between 10 and 20 sec after aortic peak, and the third pass 60 sec after the beginning of the intravenous bolus injection. Aortic peak is determined from a preliminary mini bolus. Bolus contrast injection for the study is 5 cc/sec for 30 sec of 60% iodinated contrast material. First two passes are obtained during a single breath-hold and the third pass in a separate breath-hold.



This study demonstrates a large right hepatic lobe hepatoma 8 cm in craniocaudal dimension by 6 cm in cross-sectional diameter. There is early arterial enhancement that is documented on the second phase. Right posterior portal vein is occluded by tumor and associated tumor thrombus is present.

Hepatic cirrhosis and ascites are noted. Hepatic veins, main portal vein, right anterior branch, and splenic vein are patent.

Good example of detection of hypervas-

cular primary hepatic neoplasm using the triple pass technique. The first pass is used for CT arteriography, while the second pass best delineates hypervascular neoplasm. The hypervascular neoplasm is isoattenuating with liver on the conventional third pass. Perfusion abnormalities are not uncommon in patients with hepatoma as is illustrated in this case.

Diagnosis of hepatoma was confirmed by guided biopsy.



Helical Tri-phase Liver Scanning Protocol

Technical Parameters

Scan Type	Helical
Rotation Time8 second
Prospective Thickness	
1st Phase	2.5 mm
2nd Phase	5.0 mm
3rd Phase	5.0 mm
Scan Mode	
1st Phase	HS
2nd Phase	HQ
3rd Phase	HS
Table Speed	
1st Phase	15.0 mm / Rotation
2nd Phase	15.0 mm / Rotation
3rd Phase	22.5 mm / Rotation
Prospective Image Interval	
1st Phase	2.5 mm / Retrospective recon @ 1.25 mm for 3D
2nd Phase	5.0 mm
3rd Phase	5.0 mm
SFOV	Large
kVp	120

mA	
1st Phase	320
2nd Phase	190
3rd Phase	250
Prep Delay	15.0 - 20.0 seconds (Patient Variability)
1st Phase	Aortic Peak plus 10 seconds
2nd Phase	Between 10 - 20 seconds after Aortic Peak
3rd Phase	60 seconds after start of IV injection
Recon Type	Standard

Contrast Parameters

Rate	5.0 cc's / second
Total Contrast Amount ..	150 cc's
Type of Contrast	60% Iodinated Contrast

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