SUMMARY

In patients with chronic end-stage liver disease, the radiologists assist the hepatolgist and surgeon in answering basic questions like vascular mapping of the portal vein and hepatic arteries, giving a survey of porto-systemic collaterals, revealing splenic artery aneurysms, evaluating the surgical shunt and **TIPS** function, and in the follow up post transplantation patients.

In this study 50 patients with different hepatic pathology, had been examined by **CD** sonography firstly followed by celiomesenteric arterioportography. This was done for accurate precising the hepatic vasculature and illustrating the accurate vascular anatomy, anomaly or pathological involvement.

Color Doppler (CD) imaging is found to be a valuable screening procedure for the assessment of portal vein patency. If **CD** sonogram showed a patent portal vein no further studies were required. However, a lack of demonstrable flow did not always indicate thrombosis, and other imaging studies should be performed for confirmation. **CD** had technquical limitations and pitfalls that could lead to erroneous results in diagnosis of portal vein thrombosis e.g., inappropriate color gain output and its inability to detect slow flow sometimes.

Color Doppler imaging, by passively superimposing Doppler information on the gray-scale image as a color flow map, facilitated the detection of vessels that could be missed with gray-scale or even conventional Doppler sonography. **In addition, color Doppler sonography had showed flow direction and flow pattern in real time** e.g., increased arterial flow indicates of low portal flow,

coincident reversed and hepatopetal flow in different branches of portal vein. This added physiologic information without altering hemodynamics, which occuring with the injection of contrast materials.

Color Doppler sonography had detected passively and automatically the collateral vessels, including those which were undetectable by B-mode sonography or conventional Doppler study or by angiography. **CD** had found to be more sensitive than angiography in detecting portal collaterals but angiography had found to be more accurate in precising their type.

Angiography was the definitive method of evaluating surgical porto-systemic shunts for some time. However, angiography is invasive, and the anatomically isolated portal system may be difficult to opacity, **(Abrahms 1971). CD was capable of directly imaging shunt flow and inferring patency versus thrombosis in all patients.** The examination was well tolerated and easy performed. Also **CD** could anatomically delineate the shunt with its physiological study.

Transjugular intrahepatic porto-systemic shunts **(TIPS)** have largely replaced surgically created shunts. **Conventional Duplex and color Doppler sonography were proved to be useful tools in the assessment of the stents and their associated hemodynamic changes**. A Doppler survey before and immediately after **TIPS** placement had provided a base line for evaluation of shunt function and procedure-related complications. Routine follow-up studies at regular intervals after the procedure, provide non invasive assessment of shunt patency and late complications.

According to the results of this work and the results of **(Gattoni et al, 1993), still celiomesenteric arteriography is the best examination to depict hepatic artery variants and for diagnosing**

and accessing the degree of splanchnic arterial stenosis. CD was a valuable screening non-invasive technique for splanchmic arterial stenosis; as it can detect with high sensitivity, and accuracy arterial stenosis >70%, However the mild and moderate splanchmic arterial stenosis should be evaluated by angiography (celiomesenteric arterioportography) to access the degree of stenosis and the presence of collaterals, which could not be seen accurately by CD.

Color Doppler sonography could be able to replace time-consuming angiography in vascular follow up in the early postoperative phase after liver transplantation. The frequent use of this non-invasive techniques had permitted early detection of clinically unsuspected vascular complications and subsequent immediate intervention (either by thrombolysis and angioplasty or by thrombectomy) which had lead to reduction in the rate of re-transplantation. **Angiography used for confirmation of the vascular abnormalities detected by color Doppler and to demonstrate evidence of rejection in patients with normal Doppler waveforms and bad biological results.** CD could be used in triage of patients requiring angiography.

Color Doppler examination is a valuable primary screening examination to the abdominal vessels either, portal system, splanchic arteries and subhepatic veins. Celiomesenteric arterioportography is rest as a gold standard technique to examine the abdominal vessels mainly the arterial system and to complement the results of CD examination of the other abdominal vessels. CD is still has a priority to evaluate the surgical shunt and TIPS function and to follow patient after transplantation.

In case of contradiction between the CD results and biological data in patient with transplantation, celiomesenteric arterioportography must be done.