Color doppler sonography versus abdominal anglography in hepatic vascular mapping

Amany Fathy Al All El-kharbotly

SUMMARY. In patients with chronic end-stage liver disease, the radiologistsassist the hepatolgist and surgeon in answering basic questions likevascular mapping of the portal vein and hepatic arteries, giving asurvey of porto-systemic collaterals, revealing· splenic arteryaneurysms, evaluatingthe surgical shunt and TIPS function, and in thefollow up post transplantation patients.In this study 50 patients with different hepatic pathology, hadbeen examined by CD sonography firstly followed byceliomesentericarterioportography. This was done for accurate precising the hepaticvasculature and illustrating the accurate vascular anatomy, anomaly orpathological involvement.Color Doppler (CD) imaging is found to be a valuablescreening procedure for the assessment of portal vein patency. IfCD sonogram showed a patent portal vein no further studies wererequired. However, a lack of demonstrable flow did not always indicatethrombosis, and other imaging studies should be performed forconfirmation. CD had technquical limitations and pitfalls that couldlead to erroneous results in diagnosis of portal vein thrombosis e.g.,inappropriate color gain output and its inability to detect slow flowsometimes.Color Doppler imaging, by passively superimposing Dopplerinformation on the gray-scale image as a color flow map, facilitated thedetection of vessels that could be missed with gray-scale or evenconventional Doppler sonography. In addition, color Dopplersonography had showed flow direction and flow pattern in realtime e.g., increased arterial flow indicates of low portal flow,-254coincident reversed and hepatopetal flow in different branches of portalvem This added physiologic infonnauon without alteringhemodynamics, which occuring with the injection of contrast materials.Color Doppler sonography had detected passively andautomatically the collateral vessels, including those which wereundetectable by B-mode sonography or conventional Doppler study orby angiography. CD had found to be more sensitive than angiography111 detecting portal collaterals but angiography had found to be moreaccurate in precising their type.Angiography was the definitive method of evaluating surgicalporto-systemic shunts for some time. However, angiography isinvasive, and the anatomically isolated portal system may be difficult toopacity, (Abrahms 1971). CD was capable of directly imagingshunt flow and inferring patency versus thrombosis in all patients.The examination was well tolerated and easy perfonned. Also CDcould anatomically delineate the shunt with its physiological study.Transjugular intrahepatic porto-systemic shunts (TIPS) havelargely replaced surgically created

shunts. Conventional Duplex andcolor Doppler sonography were proved to be useful tools in theassessment of the stents and their associated hemodynamicchanges. A Doppler survey before and immediately after TIPSplacement had provided a base line for evaluation of shunt function andprocedure-related complications. Routine follow-up studies at regularintervals after the procedure, provide non invasive assessment of shuntpatency and late complications.According to the results of this work and the results of (Gattoniet ai, 1993), still celio mesenteric arteriography is the bestexamination to depict hepatic artery variants and for diagnosing-255and accessmg the degree of splanchnic arterial stenosis. CD wasa valuable screening non-invasive teclmique for splanclunic arterialstenosis; as it can detect with high sensitivity, and accuracy arterialstenosis >70%, However the mild and moderate splanchmic arterialstenosis should be evaluated by angiography (celiomesentericarterioportography) to access the degree of stenosis and the presence ofcollaterals, which could not be seen accurately by CD.Color Doppler sonography could be able to replace timeconsumingangiography in vascular follow up in the earlypostoperative phase after liver transplantation. The frequent use ofthis non-invasive techniques had permitted early detection of clinicallyunsuspected vascular complications and subsequent inunediateintervention (either by thrombolysis and angioplasty or bythrombectomy) which had lead to reduction in the rate of retransplantation.Angiography used for confirmation of the vascularabnormalities detected by color Doppler and to demonstrateevidence of rejection in patients with normal Doppler waveformsand bad biological results. CD could be used in triage of patientsrequiring angiography.Color Doppler examination is a valuable primaryscreening examination to the abdominal vessels either,portal system, splanchic arteries and subhepatic veins.Celiomesenteric arterioportograpllY is rest as a goldstandard technique to examine the abdominal vesselsmainly the arterial system and to complement the resultsof CD examination of the other abdominal vessels. CD isstill has a priority to evaluate the surgical shunt andTIPS function and tofollow patient after transplantation.-256In case of contradiction between tire CD results andbiological data in patient witlr transplantation,celiomesenteric arterioportograplry must be done.