Summary and Conclusion

Liver transplantation is performed for a variety of irreversible acute and chronic liver diseases for which no other satisfactory therapy is available.

With considerable improvement in the surgical technique in the last years and new immunosuppressive therapy, overall patients' survival rates at 1 and 3 years are 85.6% and 75.9%, respectively with corresponding graft survival rates 79.8% and 68.8% respectively.

Cirrhosis and chronic liver failure are leading causes of morbidity and mortality. The most common causes of cirrhosis are viral hepatitis, excessive alcohol consumption, or nonalcoholic fatty liver disease. Most patients remain asymptomatic until the occurrence of decompensation, characterized by ascites, spontaneous bacterial peritonitis, hepatic encephalopathy, or variceal bleeding from portal hypertension.

Understanding the anatomy of the liver and biliary system and the pathology of their diseases which require liver transplantation is very valuable for their post operative assessment with US and Doppler.

Knowledge of surgical technique of liver transplantation and awareness of normal radiological appearance of the transplanted liver permit early detection of complications.

Vascular and nonvascular complications may occur after liver transplantation. Vascular complications include thrombosis and stenosis of the hepatic artery, portal vein, or inferior vena cava, as well as hepatic artery pseudoaneurysms. Nonvascular complications include biliary complications as leaks, strictures, stones or sludge, and recurrent disease. Neoplastic disease

in the transplanted liver may represent recurrent neoplasia or posttransplantation lymphoproliferative disorder. Parenchymal disease may take the form of a focal mass or a diffuse parenchymal abnormality. Perihepatic fluid collections and ascites are common after liver transplantation.

US is the primary imaging modality in the detection and follow-up of early and delayed complications of liver transplantation.

Gray-scale was first performed to assess the site, size and echo pattern of the transplanted liver, focal lesion of liver graft, intra or extra hepatic ducts and presence of intra abdominal fluid collection so it is an initial step and also a base line for further follow up.

Color Doppler is the investigation of choice for early detection and late follow up of any postoperative complications even before clinical indications, as it is safe, cheap, non-invasive and accurate

Combined use of Color and spectral Doppler US parameters resulted in diagnostic sensitivity of 100% and specificity 99%.

It is done routinely after liver transplantation from the first day postoperatively & it is performed after gray-scale US.

Color Doppler US is very important in early detection of vascular complications in recipient patient {as stenosis, thrombosis and pseudo aneurysm} of hepatic artery, portal vein, IVC and hepatic vein especially for early diagnosis of stenosis as severe stenosis can lead to allograft rejection and progress further to the development of all complications as it progress to thrombosis.

Also gray scale US and color Doppler have greater ability for early diagnosis of recurrence of hepatocellular carcinoma and recurrence of liver parenchymatous diseases.

Liver biopsy is usually performed to exclude rejection, or recurrent hepatitis or other parenchymal disease, or drug effect as a cause of allograft dysfunction.

Conclusion

It can be concluded that gray-scale US and color Doppler are the investigations of choice in postoperative liver transplantation, they can be used as a routine steps in the assessment of liver transplant graft postoperatively in recipient patient as early as possible within the first 3 days after operation and used as a late follow up, as they are noninvasive, safe, cheap, and accurate. Routine use of gray-scale US and color Doppler showed to minimize the impact of postoperative complications and maximize both graft and recipient patient survival.