SUMMARY AND CONCLUSION

The present prospective study was designed to evaluate the effect of splenectomy and devascularization operation on the haemodynamics of portal circulation and the reliability of color Doppler sonography as a non-invasive tool in the assessment of portal haemodynamic before and after the operation.

30 patients with clinical diagnosis of portal hypertension and endoscopic evidences of oesophageal and/or gastric varices, all of whom underwent splenectomy and devascularization were submitted to the study. A data collection standardized form which included anamnestic data, results of the clinical examination and the investigations performed, operative findings and procedure and the color Doppler measurements was used for each patient.

Apart from the routine laboratory investigations, all patients were subjected to the following specific investigation under evaluation in this study: Bone marrow aspiration to confirm the diagnosis of hypersplenism,

Real-time ultrasonic scanning, upper G.I. endoscopy and color Doppler scanning for both portal and splenic vein. Thereafter, all patient underwent splenectomy and devascularization, and wedge liver biopsy was taken if the pathological diagnosis was not established before the operation by needle liver biopsy. After the operation the laboratory investigations, abdominal ultrasonography, fibrotic upper G.I. endoscopy and color Doppler sonography were reported.

In analysing the relevant information from the data collection standardized forms, the following results were obtained.

The mean age was 32.1 (17-52) years old. The majority of patients were males (19 male versus 11 female). All cases had a history of bleeding varices, 8 out of 30 patients gave a history of injection sclerotherapy (1-14 sittings).

Clinical examination revealed that jaundice was present in 3 cases, anaemia in 19 patients, oedema of lower limb in 5 patients. Liver is

enlarged in 19 patients, while it was shrunken in the remaining 11 patients. On the other hand spleen was severely enlarged in 13 patients and grossly enlarged in 17 patients. Ascites was detected clinically in only one patients.

Laboratory investigations gave the criteria of hypersplenism in all cases SGOT was elevated (42.8% higher than the upper normal limit), while SGPT and alkaline phosphatase were within the normal range. Albumin level in the serum was 2.8% less than the lower normal limit, prothrombin concentration was 62.8%. 14 out of 30 patients carried the antibodies for hepatitis "B" virus, 9 patients carried the antibodies for hepatitis "C" virus the remaining 7 patients carried the antibodies for both "B" and "C" viruses.

Real time ultrasonography added 3 cases to the list of ascitic patients also, 2 cases with gall bladder stones were detected during routine abdominal ultrasonography.

Upper G.I. fibrotic endoscopy revealed 3 patient with grade II varices, 14 patients with grade III varices and 11 patients with grade IV

varices. As regard gastric varices there were 6 cases with gastric varices 2 of which had only gastric varices.

Color Doppler scanning of portal vein revealed that the mean diameter was 1.3 cm, the mean blood velocity was 12.5 cm/sec., the mean volume blood flow was 1073 ml/min., and the mean congestion index was 0.138. The direction of blood in the portal vein was hepatopetal in 96.7% and hepatofugal in 3.3% of cases. As regard the splenic vein measurements obtained from color doppler scanning, the mean diameter was 1.03 cm. the mean blood velocity was 11.8 cm/sec., the mean volume blood flow was 594.9 ml/min. The direction of blood flow in the splenic vein was hepatopetal in 86.7% and hepatofugal in 13.3% of cases.

Two weeks after the operation, all laboratory findings of hypersplenism were corrected, there was marked decrease in the grade and number of columns of oesophageal varices, while gastric varices disappeared. The blood velocity and volume blood flow decreased after the operation. The direction of blood flow was hepatopetal in all cases.

Statistical analysis of the obtained results revealed that there were positive correlation between blood velocity and volume blood flow in the splenic and the portal vein before the operation. Moreover, negative correlation were found between the blood velocity in the splenic vein before the operation and the relative changes in the blood velocity and volume blood flow of portal vein after the operation.

There was a negative significant correlation between bilirubin level and relative changes in blood velocity of portal vein after the operation, on the other hand there was positive significant correlation between prothrombin concentration and relative changes in the blood velocity of portal vein after the operation.

It was also found that the decrease in the blood velocity and volume blood flow is directly related to the degree of splenomegaly as detected by clinical examination.

Statistical analysis revealed that the number of injection sclerotherapy sittings were positively significantlly correlated to the diameter of portal vein and the volume blood flow of splenic vein before the operation.

Conclusion:

On the basis of this study, as well as other reported series, it is concluded that splenectomy and devascularization can be performed with extremely low mortality in selected elective patients, particularly the non alcoholic, with virtually no postoperative encephalopathy. Furthermore the preservation of the vascular anatomy of the right upper quadrant for future use in potential liver transplants is a definite advantage.

Portal vein blood velocity and volume blood flow decreased after the operation. It is thought that the lack of inflow from the splenic vein into the portal vein after splenectomy caused the decrease in the blood velocity and volume blood flow in the portal vein after the operation. Based on the fact that there is a significant positive correlation between the size of the spleen and the decrease in the blood velocity and volume blood flow of portal vein

after the operation, it is suggested that this splenic venous flow contributed, in part, to portal hypertension.

The operation did not lead to complete disappearance of oesophageal varices, and follow up by endoscopy is recommended to assess the need of sclerotherapy for the variceal remnants.

The Doppler scanning is an ideal investigation for portal circulation, as it is non-invasive, cheap, and provide accurate data about the velocity, volume flow, direction o blood flow and patency of portal circulation.