

ABNORMAL HEPATIC ARTERY - A CASE REPORT

RAJENDRAPRASAD, R., SIVANANTHINI, S.
Department of Anatomy, Faculty of Medicine,
University of Jaffna, Kokuvil, Sri Lanka

ABSTRACT

An abnormal hepatic artery was observed in a routine dissection, of a male cadaver, to arise from superior mesenteric artery. It is formed in a plane behind that of the portal vein and continued to maintain it. There were no right gastroepiploic and gastric arteries from it. This artery divided into right and left hepatic branches at the hilum of the liver and the internal hepatic vascular supply belongs to this artery only. The hepatic arterial system in this observation could be explained as error in its developmental process. The hepatic artery anomaly is highly associated with liver related diseases and preoperative evaluation of the hepatic arterial tree is stressed. The knowledge of hepatic anomaly could also provide a margin of safety if used in relevant surgical procedures.

Key Words: Abnormal, Artery, Development, Transplant.

INTRODUCTION

The internal segmental organization of hepatic vascularity and its external collateral supply are well established facts in literature. The extra hepatic supply is considered normal when common hepatic artery arises from coeliac trunk, follows a normal path way, gives off its branches and finally divides into right and left hepatic branches at the hilum of liver (65%). The present observation revealed that the common hepatic artery arose from superior mesenteric artery. This could be explained as error in its complex development.

Address for Correspondence

Dr. R. Rajendraprasad,
Department of Anatomy, Faculty of Medicine, University of Jaffna
E-mail: Ujanatomy@sltnet.lk

OBSERVATION

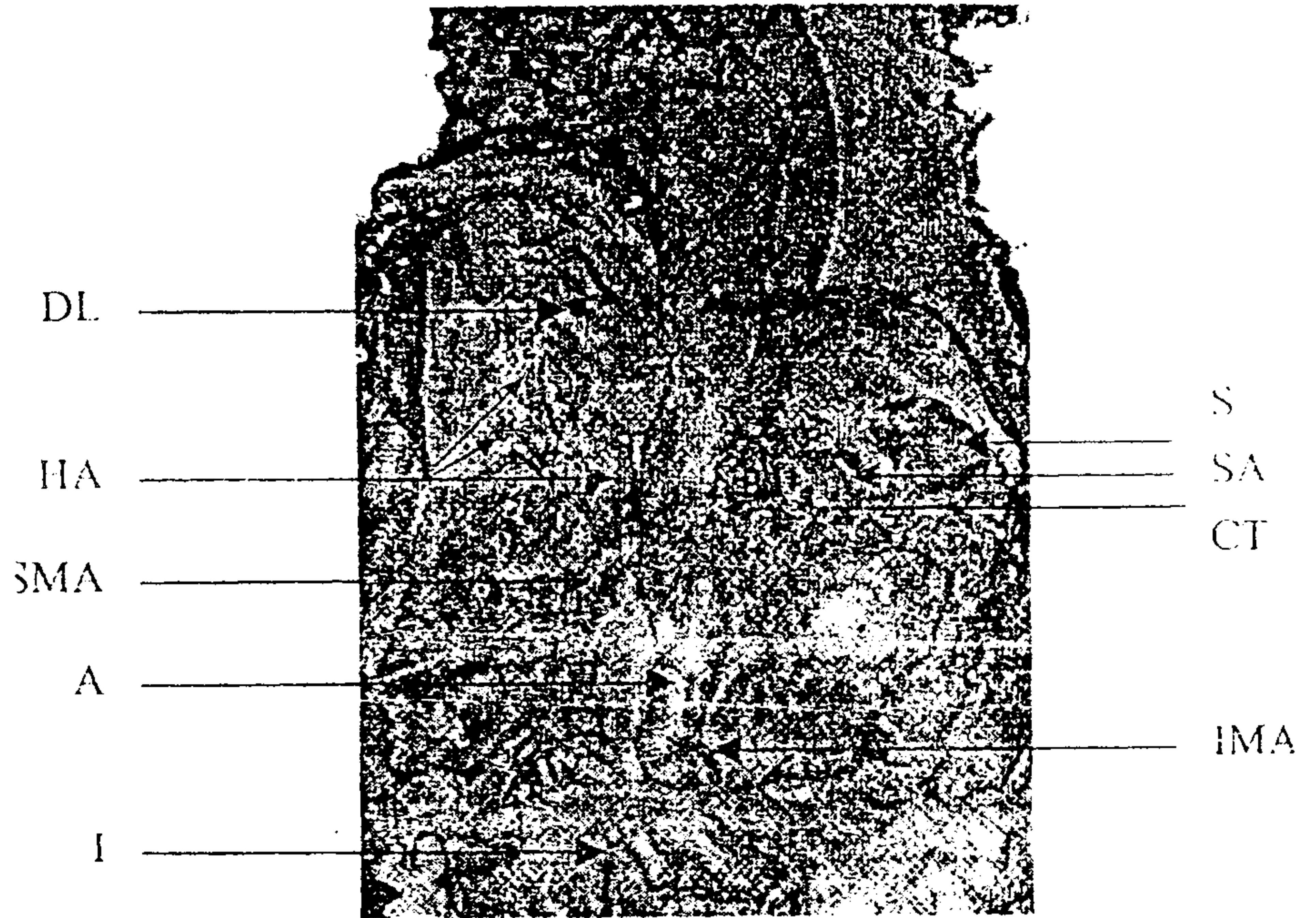
In a routine dissection by a group of medical students, an abnormal hepatic artery was noticed to arise from superior mesenteric artery near its origin. It ascended upwards and laterally behind the pancreas to the formation of portal vein and then continued to occupy a plane posterior to it. At the first part of the duodenum it gave a duodenal artery before it entered the free margin of the lesser omentum. The right gastroepiploic and right gastric were not given off from this artery. In the lesser omentum it maintained a posterior relationship to the bile duct and portal vein and finally get divided into right and left hepatic branches at the hilum of the liver.

DISCUSSION

The literature has repeatedly indicated that anomalous anatomy of the hepatic arterial system amounts to 35 to 40% of the case studied (Hardy et al, 1994; Mcminn et al. 1994; Velpe et al 1998; Woodburne, 1961; William et al. 1995). The common hepatic artery (4%) or its discrete branches or a portion of its hepatic supply (37%) may arise from the fore or mid gut arterial system (Woodburne 1961). These variations could be explained as errors in the complex development. During development, anastomosing dorsal and ventral splanchnic arterial trunks are formed on the wall of the primitive gut. This plexus ultimately receives the blood supply from the aorta by three visceral arteries. The ventral splanchnic anastomosis gives rise to hepatic artery and the anastomosis of right and left gastric arteries. The hepatic diverticulum and its segmental pattern of branching is followed by the developing hepatic artery and its divisions. This would explain the normal intrahepatic segmental vascular organization and extra hepatic collateral circulation.

The aberrant hepatic arteries are attributed to the error in the complex rearrangement of the developing hepatic arterial system and these still maintain end arterial pattern. (William et.al. 1994; Woodburne 1961). In this observation the hepatic artery arose from superior mesenteric artery near its origin and there were no gastroepiploic and gastric branches. It also maintains a posterior plane to portal vein through out its course. As the hepatic branches are normal from this arteries the intrahepatic vascular organization belongs to this artery only.

Abnormal hepatic artery arising from superior mesenteric artery



- SA - Aorta
- CT - Coeliac Trunk
- DL - Diseased Liver
- HA - Hepatic Artery and Branches
- I - Intestine
- IMA - Inferior Mesenteric Artery
- S - Spleen
- SA - Splenic Artery
- SMA - Superior Mesenteric Artery

Hepatic arterial anomaly is highly associated with liver related diseases (50%) (Chaib. E., 1933) and this affects the outcome of liver craft. This stresses the importance of preoperative evaluation of the hepatic arterial tree during organ harvesting (Makisala. H. et al. 1993). Further the knowledge of the hepatic arterial anomaly could also provide a margin of safety to avoid hepatic injury during pancreatico-duodenectomy (Volpe.E.M.et.al 1998).

REFERENCES

1. Chaib, E., (1993): *Liver Transplantation: anomalies of the hepatic artery in 80 donors. Arq. Gastroenterology Oct-Dec., 30(4): 82-7.*
2. Hardy, K.J., Jones.R.M. (1994): *Hepatic artery anatomy in relation to reconstruction in Liver transplantation: Some unusual variations. Aust. W.Z.J. Surgical: June 64(6): 437-440.*
3. Makisalo, H., Chaib. E., Krokos, N., Colne, R., (1993): *Hepatic arterial variations and liver related diseases of 100 consecutive donors. Transpl. Int., 6(6):325-9*
4. McMinn, R.M.H. (1994): *Lasts anatomy. Regional and applied, Churchill Livingstone. 9th Edition.*
5. William, P.L. (1995): *Gray's anatomy. The anatomical basis of medicine and surgery. Churchill Livingstone. 2091P*
6. Woodburne, R.T. (1961): *Segmental anatomy of liver. Blood supply and collateral circulation. Third annual merck and Dohme Conference on "The liver and its disease" at the university of Michigan, June pp:189-199.*
7. Volpe, C.M., Peterson, S., Hoover. E.L., Doerr, R.J. (1998): *Justification for visceral angiography prior to pancreatico-duodenectomy. Am-Surgical., 64(8): 758-61.*