Case Report

MULTILOBULATE SPLEEN – A CASE REPORT

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ABSTRACT

Anomalies of spleen include persistant lobulation, multilobulated spleen, accessory spleen, splenunculi, wandering spleen, ectopic spleen, asplenia, polysplenia and splenogonadal fusion. Anomalies of spleen may or may not be associated with anomalies in other organs. Present study is a case observed in the department of anatomy at Govt. Medical college Aurangabad during routine cadaveric dissection for I M.B.B.S. students. The cadaver showed multilobulated spleen (six lobules) of variable sizes completely separate from each other. Each covered by separate capsule and having independent branches from splenic artery supplying each of them. Histological sections of the tissues confirmed the features consistent with the spleen. No other abnormal developmental features were seen in the said cadaver particularly the heart and vessels. Present study was compared with the work of previous workers. Anamolies of spleen are important in respect of the clinical conditions where torsion/ infarction of the splenic lobules can occur, moreover in cases where spleenectomy is indicated. All the respective lobules (multilobulated spleen) should be resected otherwise even the smallest splenic lobule can take over function fully, thereby nullifying the effect of spleenectomy.

Key words: polysplenia, spenunculi, congenital anomalies.

INTRODUCTION

The spleen is a largest lymphoid organ situated in left hypochondrium between fundus of stomach and the diaphragm. It develops in dorsal mesogastrium as a localised thickening of coelomic epithelium at about 6th week of intrauterine life. A number of nodules fuse to form spleen. Hence it is lobulated during development, but this lobulation normally disappears before birth. The notches at the superior border of spleen indicates it's multinodular origin. (Sadler TW[1] and Patricia Collins[2]). The various developmental anomalies of the spleen are persistent lobulation or multilobulated spleen, accessory spleen or spleniculi, wandering spleen, ectopic spleen, aspleenia, polyspleenia and splenogonadal fusion due to abnormal development of spleen.

CASE REPORT

During routine cadaveric dissection of 1st MBBS students in department of anatomy of Govt. Medical College Aurangabad, a rare case of multilobulate spleen was found in a male cadaver.

In present case, we found a spleen with multiple lobules. The spleen was at its normal position. But it had six small lobules which were completely separated from each other by connective tissue septa. The lobules were numbered according to their sizes. (Fig1and 2) The approximate sizes of the lobules were Lobule1: 6.74-3-1.4 cm3, Lobule2:6.8-2.9-1.2cm3, Lobule3:6.7-3.4-1.2cm3, Lobule4:1.4-1.3-1.5cm3, Lobule5:1-1-1cm3, Lobule6:0.5-0.5-0.4cm3. The approximate weight of spleen (including all the lobules) was 90gm. Each lobule had it's own hilum. Through which branches of splenic artery entered into the lobule and tributaries of splenic vein come out from the lobule.

During the dissection the said spleen was removed with the arterial branches .The splenic artery was seen dividing into branches outside the spleen in the dorsal mesogastrium to supply the each lobule of the spleen. (Fig 3) care was taken to define the associated peritoneal folds. The branches of each lobule were traced to the parent trunk (main splenic artery) and then to the coeliac trunk. Each lobule was cleared for surrounding connective tissue and for in the associated peritoneal folds. All the above were properly photographed and documented. Sections of the tissue were taken specially for differentiation between the smaller lobules and lymph nodes. (Fig 4)

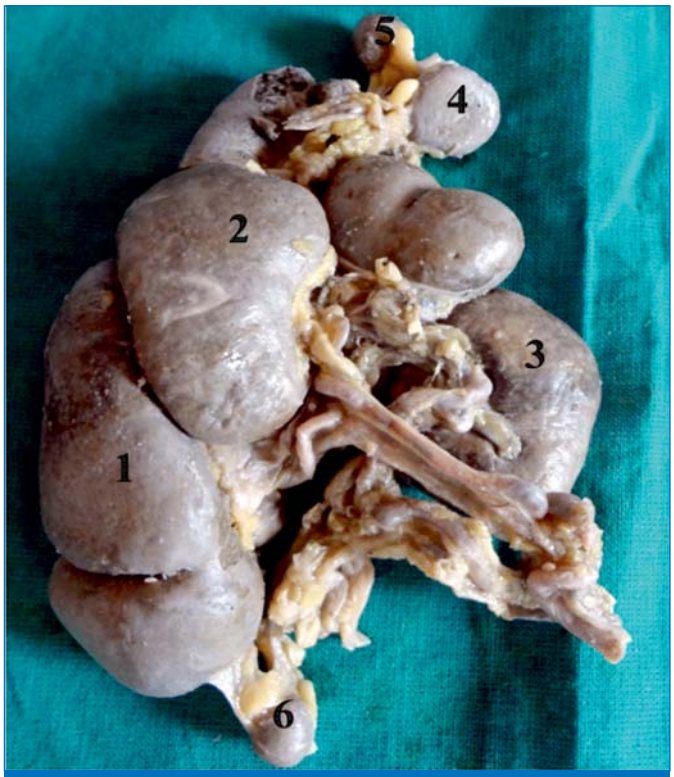

Fig. 1 : Photograph Showing the lobes numbered according to the sizes

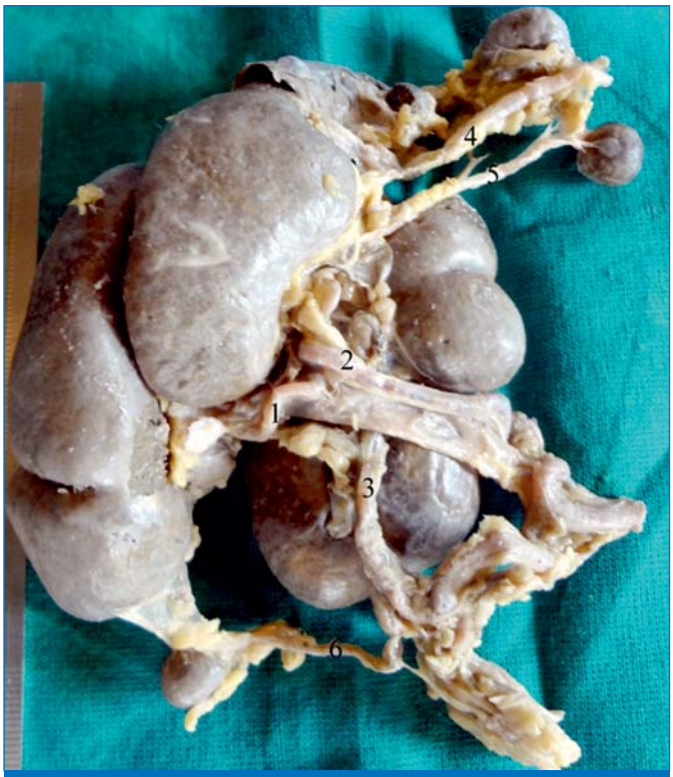

Fig. 3 : Photograph Showing numbers 1 to 6 arteries of respective lobes

Fig. 2 : Photograph Showing the lobes numbered according to the sizes

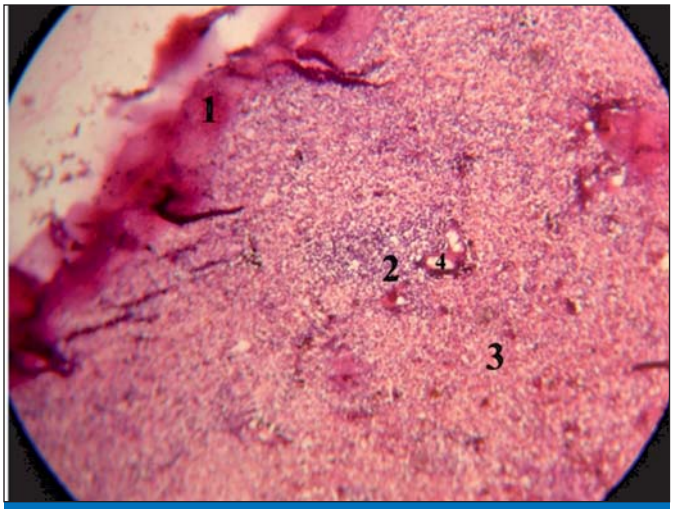

Fig. 4 : Photograph Showing Histology of Spleen labelled as 1 - Capsul 2 - White Pulp 3 - Red pulp 4 - Arteriole in White pulp

DISCUSSION

Ectopic splenic tissue results from two etiologies – 1)accessory spleen or splenunculi (congenital) and 2)splenosis (acquired). Accessory spleen represents congenital ectopic splenic tissue and was found in 10 – 44% of all necropsies (Al Ahmadi et al[3] 1998)

Most common location of splenunculi was near hilum of spleens and can occur in contiguity with the tail of pancreas. It may be found at mesentery, Omentum and peritoneum were the rare sites. (Hayward et al[4] 1992). Most of the splenunculi were asymptomatic and were discovered incidently by abdominal ultrasound or CTscan. In few cases they became symptomatic causing abdominal pain due to torsion or infarction. (Raichuk et al[5] 1994)

Harshmohan et al[6]2002 found three incidental cases of splenunculi diagnosed on histologic examinations. Splenunculi should be differentiated from splenosis which was an acquired condition associated with splenic trauma or surgery. Splenosis presented as numerous nodules in any intraperitoneal or extraperitoneal location. Histologically splenunculi had histological features of normal spleen whereas splenosis nodules did not have central arterioles in the follicles. Agenesis of spleen and multilobulate spleen were rare anomalies. C.S. Muir[7] (1959) recorded the incidence of splenic agenesis and multilobulate spleen in 22,500 autopsies performed at the General Hospital, Singapur. He found seven cases of splenic agenesis and one case of multilobulate spleen out of 520 died with some form of congenital heart disease.

Kristin D et al[8] (2000) studied the relationship of spleen, handedness with the expression of gene. The expression of homeobox gene NKX2-5 serves as a marker for splenic precursor tissue. Pre-splenic tissue is initially located in symmetric domains on both sides of the embryo , but during subsequent development, only the left side goes on to form mature spleen and the right side undergoes differential programmed cell death. Therefore, the final location of the spleen on the left side of the body is decided.

Yeo- Sung Yoon et al[9] (2000) studied the morphological structure of accessory spleen in 21 chinese hamster. They found accessory spleen in 5 animals aged more than 7 months increasing with age and showing histological features of that of normal spleen.

G. Gayer MD[10] et al (2001) studied various congenital anomalies of the spleen on CT scan. They found various splenic anomalies like accessory spleen, wandering spleen and polysplenia. An accessory spleen was present in about 10% of individuals commonly situated near the hilum of spleen or adjacent to the tail of pancreas. Wandering spleen or ectopic spleen was mainly found in children and women aged 20-40 years. The major complication was acute, chronic or intermittent torsion caused by increased mobility as it has long mesentery.

Hakk Maummer Karakas et al[11] (2005) studied splenic abnormalities on CT scan and MRI. They found the congenital variations of spleen like asplenia and polysplenia syndrome. Both anomalies were associated with multiple system and organ anomalies including the liver and heart.

Ming Jen Chen et al[12] (2005) studied splenic abnormalities on ultrasonography. Out of 103 splenic abnormalities, they found congenital anomalies, accessory spleen in 5 patients. An intrahepatic or intrapancreatic accessory spleen form homogenous mass in parenchyma of liver and pancreas and should be differentiated from neoplastic lesion.

Shrijit Das et al[13] (2008) studied the pattern of splenic notches in 100 cadavers. They found 2 to 4 splenic notches at superior border Of spleen in 98 specimens. In only 2 specimens splenic notches were at inferior border of spleen. Out of which one specimen has splenic notches at superior as well as inferior border. It was important to differentiate it from an injury mark on spleen.

Varga I et al[14] (2009) studied the congenital anomalies of spleen like lobular spleen, accessory spleen, ectopic spleen, wandering spleen, polysplenia, asplenia and splenogonadal fusion. They found lobular spleen with no other clinical features. Accessory spleen (splenunculi) found in about 10 to 30% of patients at autopsy. Accessory spleens was found near hilum of spleen, in gastosplenic or lineorenal ligaments, in pancreas, liver, stomach wall or even in pelvis. Ota and Ona[15] (2004) and Guo et al[16] (2009) described an accessory spleen in pancreas which imitated a tumour in pancreas. Izzo et al[17] (2004)and Davidson and Reid[18] (1997) found an accessory spleen in the liver which caused chronic

hepatitis. Ectopic spleen was rare and found in various places in abdominal cavity, near urinary bladder (Kapellerova et al[19] 1999) in left iliac fossa (Etcheverry et al[20] 1989) or in thoracic cavity (Carvajal- Balaguera et al[21] 1995). Wandering spleen of spleen was an accidental finding which primarily affect children (Raissaki M et al[22] 1998) and women of reproductive age (Sty JR et al[23] 1985). Splenectomy or splenopexy may be needed in the treatment of of complication of wanderind spleen Asplenia or polysplenia are rare anomalies and most often found in association with multiple organ disorders. Asplenia is associated with an increased incidence of life threatening sepsis caused by encapsulated bacteria.

In present case, we found spleen consisted of 6 lobules of variable sizes. Each having their own seprate artery coming from the main splenic trunk. The total weight of splenic tissue was 90 gms equal to normal weight. The largest lobule measured was 6.8 cm and the smallest was 0.6 cm in it's longest axis. The multilobulate spleen in present case can be explained on the basis of non fusion of splenic lobules during development. There was no associated cardiovascular malformation or any other obvious anomaly. This is a rare observation of multilobulate spleen without other anomalies.

CONCLUSION

These sort of anomalies should be kept in mind during clinical evaluations like splenomegaly, splenic traumas and lymahadenopathy (Anomalies like above can give false positive or false negative results) in clinical or imaging evaluations.

In cases where splenectomy is required due care is needed to remove all the splenic lobules, otherwise the residual lobules even though quite smaller may take the function there by nullifying the effect. An accessory spleen have clinical significance , act as preservable splenic tissue in cases of a ruptured primary spleen or undergo complications like torsion or bleeding caused by spontaneous rupture.

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