

Histopathological Review of Splenectomy Specimens: A Five Year Study in a Tertiary Care Centre in North India

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ABSTRACT

Objective: To analyze the spectrum of pathological changes observed in splenectomy specimens in a tertiary Care centre for a period of five years.

Material And Methods: This was a retrospective study carried out in the Postgraduate department of Pathology, Govt. Medical College Jammu from 1st January 2014 to 31st January 2019. Slides and clinical data were retrieved from the histopathology section of the department.

Results: The present study included 65 cases, out of which 45 were males and 20 were females. Most common cause of splenectomy was traumatic spleen followed by fibro congestive splenomegaly.

Conclusion: Splenic pathology has not been much studied in our region. This study was taken up to highlight the histomorphological patterns of surgically removed splenectomy specimens which can help the clinicians to plan the management of patients with splenic mass or unexplained splenomegaly.

Keywords: Splenectomy, fibrocongestive spleen, traumatic spleen.

INTRODUCTION

The spleen is the largest organ in the mononuclear phagocytic system. It is also known as the graveyard of RBCs as it removes old and senescent red blood cells and holds a reserve of blood which can be valuable in conditions like hemorrhagic shock. It is involved in all the systemic inflammations, generalized hematopoietic diseases as well as metabolic disorders. ⁽¹⁾ It weighs about 150 grams and is situated between 9th and 12th ribs in a healthy adult; between the fundus of the stomach and diaphragm. Since, it lies in the left hypochondrium where it is not protected by any rib cage, it is more prone to traumatic injuries. The incidence of traumatic rupture of spleen increases due to rise in automobile

injuries. ^(2,3) Splenectomy dates back to 1549 when Zarcarello did first splenectomy in Italy. In 1826, Quittenbaum did first elective splenectomy for portal hypertension. Bryant did first splenectomy in 1866 for leukemia and in 1892 first emergency splenectomy was done for trauma in Germany. In 1911 and 1916 elective splenectomy was done for autoimmune hemolytic anemia and ITP respectively. ⁽⁴⁾ Splenectomy is performed either as emergency procedure or elective surgery. The various indications of therapeutic splenectomy are splenic rupture, hematological disorders, storage disorders, abscess, cysts, tumours, infiltrative disorders and certain miscellaneous conditions. ⁽⁵⁾ Spleen is considered as

vestigial organ and therefore the surgeons do not hesitate in performing splenectomy. However, the procedure should be avoided and can be performed only when the benefits outweigh the complications of performing splenectomy. Overwhelming infections may occur days or years of performing splenectomy causing a mortality of 50 to 80%. Therefore, attempts are made to save the splenic functions especially in children by either performing the repair of laceration or partial splenectomy only. ⁽⁶⁾

MATERIAL AND METHODS

This is a five year retrospective study carried out in the histopathology section of the Postgraduate department of Pathology, Govt Medical College Jammu ; from 1st 2014 January to 31st January 2019. A total of 65 cases of splenectomy specimens received during this period were

studied. The parameters like age, sex, cause of splenomegaly and splenectomy were recorded from the histopathological forms taken from the record section. The gross features like dimensions, weight, capsular features and other relevant gross features were taken from the grossing forms. Blocks and slides were retrieved and reviewed by all the authors.

RESULTS

Out of the 65 cases studied, 40 were males and 25 were females, with a male to female ratio being 1.6:1. The age of the patients ranges from 2 to 70 years. The highest incidence of splenectomy cases were in the age group of 21-30 years and 31-40 years and the incidence declines after 55 years. The age and sex distribution of cases is depicted in table 1.

Table 1: showing age and sex distribution of cases.

Age of patients(years)	Number of patients	Male	Female	Percentage(%)
0-10	04	03	01	6.15
11-20	09	06	03	13.85
21-30	28	16	12	43.07
31-40	14	09	05	21.53
41-50	05	03	02	7.69
51-60	03	01	02	4.61
61-70	02	02	---	3.00
TOTAL	65	40	25	100

Table 2: showing histomorphological distribution of various splenectomy lesions.

S.No.	Histopathological Diagnosis	Number of cases	Percentage (%)
1	Traumatic spleen	41	63
2	Congestive splenomegaly	07	10.7
3	Haemorrhagic infarct	03	4.6
4	Septic infarct	02	3
5	Tubercular splenic abscess	03	4.6
6	Splenic abscess	02	3
7	Hydatid cyst of spleen	01	1.5
8	Normal spleen with foci of congestion	04	6.15
9	Hypersplenism	01	1.5
10	Myeloproliferative disease	01	1.5
	TOTAL	65	100

The majority of cases 63% (n=41) of splenectomy were done for traumatic spleen following road traffic accidents and blunt trauma abdomen; followed by congestive splenomegaly 10.7% (n=7), splenic infarcts 7.69% (n=5) like hemorrhagic and septic infarcts. Table 2 shows the histomorphological distribution of various splenectomy lesions. The main gross findings in case of traumatic spleen were capsular rupture,

haemorrhage and laceration and microscopy shows vascular congestion, necrosis and polymorpho nuclear neutrophilic infiltration at the laceration area. Cases of congestive splenomegaly show congestion of the red pulp along with marked sinusoidal dilatation, presence of gamma gandy bodies and fibrous thickening of the capsule. The cause of chronic venous congestion was mainly portal hypertension

due to cirrhosis and Budd Chiari syndrome as recorded in the patient's clinical details. There were three cases of haemorrhagic infarcts and all of them presented with acute abdomen. Microscopy shows vascular congestion, haemorrhage and necrosis. Cases of septic infarcts showed the presence of pale infarct grossly and microscopic examination showed acute or chronic inflammatory infiltrate. Three cases of splenectomy were diagnosed as tubercular splenic abscess; 2 were males and one was female. One of the male patients had a history of pulmonary tuberculosis. Grossly, the spleen was enlarges and cut section shows multiple pale yellow nodules scattered in the splenic parenchyma and focal areas of necrosis were present. Microscopic examination shows chronic inflammatory infiltrate, multinucleated giant cells, occasional epitheloid cell granulomas in a necrotic background. ZN staining for acid fast bacilli was done which was positive; thus confirming the diagnosis of tubercular abscess. There was one case of a 26 years old female which showed the presence of echinococcus granulosus in both spleen and kidney. Gross examination showed pearly white hydatid cyst membrane and microscopy show acellular thick outer layer and inner germinal layer. A splenectomy specimen of a five year female was received, who was a known case of thalassemia, with history of massive blood transfusions; grossly the specimen weighs 750grams and measures 13x6x5 cms. Microscopic examination shows haemorrhage, congestion along with heavy sprinkling of golden yellow pigment. It was reported as a case of hypersplenism.

DISCUSSION

Spleen is the largest organ of the mono nuclear phagocytic system. Many studies on splenic pathology have not been reported in our region. The present study includes the histomorphological spectrum of 65 cases of splenectomy reported in our institution over a period of five years.

By its anatomic location, where it is not protected by the rib cage, it is most commonly injured abdominal organ from the non penetrating external injuries. ⁽⁷⁾ The most common causes of traumatic spleen are automobile accidents, blow or kick on abdomen, fall from height or on ground level, athletic injuries, gunshot wounds etc. In the present study, out of 65 total cases, there were 41 cases (63%) of traumatic spleen. The highest incidence of traumatic spleen was in the 2nd and 3rd decades of life and the most common cause was road traffic accidents. This was in concordance with the studies done by Alkindi H et al ⁽³⁾ and Smithi J et al. ⁽⁸⁾ The second most common cause of traumatic spleen in the present study was blunt trauma abdomen. In the studies done by Smith J et al ⁽⁸⁾ and Sayers RD et al, ⁽⁹⁾ they also reported the blunt trauma abdomen to be the second common cause of traumatic spleen after road traffic accidents. There was a higher incidence of male preponderance in the present study with a male to female ratio of 1.6:1. This was comparable to other studies. ^(10,11)

The second most common cause of splenectomy in the present study was congestive splenomegaly (n=7, 10.7% cases). In a study performed by Patel H et al, ⁽¹²⁾ they found congestive splenomegaly as the most common cause of splenectomy may be because of the low incidence of RTAs in their region.

Splenic infarction is a condition in which blood flow to the spleen is compromised, leading to partial or complete infarction in the organ. ^(13,14) There are various causes of splenic infarction like haematological disorders such as the myeloproliferative disorders, haemoglobinopathies, sickle cell anemia or Gaucher's disease, thromboembolism or cardiovascular disorders. Specific infections can also cause septic infarcts in the spleen like infectious mononucleosis, cytomegalovirus infection, malaria babesiosis etc. ⁽¹⁵⁾ In the present study also, there were five cases of splenic infarcts. Out of which, three were hemorrhagic infarcts

and two cases were of septic infarcts. In the present study, there was one case of myeloproliferative disorder that is chronic myelogenous leukemia undergoing splenectomy. It was a case of 54 years old male presented in the CML blast crisis with massive splenomegaly, and persistent thrombocytopenia.

In the present study, there was one case of hypersplenism. Hypersplenism is a disorder that causes rapid and premature destruction of blood cells in spleen. Splenomegaly is one of the symptoms associated with hypersplenism. It can be primary (cause not known) or secondary hypersplenism due to various causes like infections (e.g. malaria), chronic liver diseases like hepatitis C, cirrhosis etc, autoimmune disorders, Gaucher's disease. In secondary hypersplenism, the underlying cause should be treated first to prevent further sequestration and destruction of the blood cells and possible spleen enlargement. Splenectomy should be kept as a last resort. It will correct the effect of low blood cell concentrations.

CONCLUSION

In the present five year retrospective study, we noticed that traumatic spleen due to RTA was the most common cause of splenectomy in our region. Reduction in the RTA by following safety measures can help reduce the risk of splenic trauma; thereby reducing the incidence of splenectomies.

Splenectomy, in our institution, is primarily done as a therapeutic approach but it can be reserved and less invasive procedures like Fine Needle Aspiration Cytology or conservative procedures like partial splenectomy or repair of lacerations can be performed; particularly in children to avoid the risk of overwhelming post-splenectomy infections (OPSI).

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