Histomorphological Pattern of Splenectomy Specimens - A Two Year Study in a Tertiary Teaching Hospital

Sushma Jagadev1, Chowdari Balaji2, Suryakala Chappa3, Padma Priya Balakrishnan4, Sri Nagesh Etha5, Bhagyalakshmi Atl6

1Assistant Professor, Department of Pathology, Andhra Medical College, Visakhapatnam, Andhra Pradesh, India. 2Assistant Professor, Department of Pathology, Andhra Medical College, Visakhapatnam, Andhra Pradesh, India. 3Assistant Professor, Department of Pathology, Andhra Medical College, Visakhapatnam, Andhra Pradesh, India. 4Postgraduate, Department of Pathology, Andhra Medical College, Visakhapatnam, Andhra Pradesh, India. 5Postgraduate, Department of Pathology, Andhra Medical College, Visakhapatnam, Andhra Pradesh, India. 6Professor and HOD, Department of Pathology, Andhra Medical College, Visakhapatnam, Andhra Pradesh, India.

ABSTRACT

BACKGROUND
The indications for splenectomy vary from one part of the country to the other. We wanted to evaluate the indications for splenectomy at a tertiary care centre in South India.

METHODS
An observational study was conducted in the Department of Pathology over a period of 2 years. 31 splenectomy specimens were analysed for histomorphological features.

RESULTS
Common indications were trauma spleen (38.70 %) and congestive splenomegaly (58.06 %). The common cause of congestive splenomegaly was sickle cell anaemia.

CONCLUSIONS
Congestive splenomegaly was the commonest indication of splenectomy, followed by traumatic rupture.

KEYWORDS
Splenectomy, Histomorphology, Sickle Cell Anaemia, Trauma

Corresponding Author:
Dr. Sushma Jagadev,
15–15–9/5, ELRS Residency,
Budhavaram Garden,
Maharanipeta, Visakhapatnam,
Andhra Pradesh, India.
E-mail: drjsushma@gmail.com
DOI: 10.18410/jebmh/2020/388

How to Cite This Article:
Jagadev S, Balaji C, Chappa S, et al. Histomorphological pattern of splenectomy specimens - a two year study in a tertiary teaching hospital. J Evid Based Med Healthc 2020; 7(35), 1867-1870. DOI: 10.18410/jebmh/2020/388

Submission 10-06-2020,
Peer Review 16-06-2020,
Acceptance 30-06-2020,
Published 31-08-2020.

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BACKGROUND

Spleen is an important organ of the mononuclear phagocytic system and is not protected by bony cage. The common indications of splenectomy are splenic vein thrombosis with bleeding gastric varices, idiopathic thrombocytopenic purpura, physical trauma, spontaneous rupture, hypersplenism due to hemoglobinopathies, tropical splenomegaly and staging of lymphomas.

Due to increase in automobile accidents there is increase in the prevalence of traumatic rupture of spleen. The spleen plays a very important role in haematological disorders and immunosurveillance.1,2

In hemoglobinopathies frequent blood transfusions and splenectomy are only options left to increase survival and quality of life. Splenectomy is indicated in the transfusion-dependent patient when hypersplenism increases blood transfusion requirement and prevents adequate control of body iron with chelation therapy. An enlarged spleen without the need for transfusion is not an indication for surgery. Splenic pathology has not been much studied in this area.3,4 The present study aims to draw attention to the histomorphological patterns in splenectomy specimens received in our department.

We wanted to analyse the various histomorphological patterns in splenectomy specimens.

METHODS

This is an observational study carried out over a period of two years from January 2018 to December 2019 in the Department of Pathology at a tertiary care centre. Thirty one splenectomy specimens were analysed. The indications for the splenectomy and other relevant clinical information were recorded.

All the specimens were fixed in 10 % formalin for 24 - 48 hours after sectioning by bread loafing technique and adopted paraffin embedded processing technique. The sections were stained with routine Hematoxylin and Eosin stain. The histopathological slides were reviewed and the microscopic findings were studied and correlated with the clinical data. The results were recorded and analysed.

RESULTS

In the present study, 31 splenectomy cases were analysed. The histopathological spectrum in splenectomy cases were traumatic spleen (Fig. 2) constituting 12 / 31 (38.70 %), congestive splenomegaly 18 / 31 (58.06 %) (Fig. 1, 1A, 1B) and pyogenic abscess 1 / 31 (3.22 %) of cases (Table 1).

Causes of congestive splenomegaly are sickle cell anaemia with cholelithiasis in 3 / 18 (16.66 %), sickle cell anaemia in 4 / 18 (22.22 %), Thalassemia 5 / 18 (27.77 %). Idiopathic thrombocytopenic purpura 4 / 18 (22.22 %) and single case of portal vein thrombosis and splenic vein thrombosis (Table 2).

Trauma was more common in the age group of 41-60 years (5 / 31; 16.21 %), Hemoglobinopathies are more common in the age group of 1-20 years of age (14 / 31; 45.16 %) and Idiopathic thrombocytopenic purpura was more common in the age group of 1-20 years (4 / 31; 12.90 %) (Table 3). The male: female distribution in splenectomy cases was 23:8 (2.8: 1) (Table 4).

Histopathology Number Percentage

| Trauma               | 12      | 38.70 |
|----------------------|---------|-------|
| Congestive Splenomegaly | 18     | 58.06 |
| Pyogenic Abscess     | 1       | 3.22  |
| **TOTAL**            | **31**  |       |

Table 1. Histopathological Spectrum of Splenectomy Specimens

Histopathology Number Percentage

| Sickle Cell Anaemia with Cholelithiasis | 3       | 16.66 |
|-----------------------------------------|---------|-------|
| Idiopathic Thrombocytopenic Purpura     | 4       | 22.22 |
| Thalassemia                            | 5       | 27.77 |
| Sickle Cell Anaemia                    | 4       | 22.22 |
| Portal Vein Thrombosis                 | 1       | 5.55  |
| Splenic Vein Thrombosis                | 1       | 5.55  |
| **TOTAL**                              | **18**  |       |

Table 2. Causes for Congestive Splenomegaly

HPE Number Age Distribution

| HPE                  | Number | 1 - 20 Years | 21 - 40 Years | 41 - 60 Years |
|----------------------|--------|--------------|---------------|--------------|
| Trauma               | 12     | 4            | 3             | 5            |
| Pyogenic Abscess     | 1      | -            | -             | -            |
| Sickle Cell Anaemia with Cholelithiasis | 3     | 2            | 1             | -            |
| Idiopathic Thrombocytopenic Purpura | 4     | 4            | -             | -            |
| Thalassemia          | 5      | 5            | -             | -            |
| Sickle Cell Anaemia  | 4      | 3            | 1             | -            |
| Portal Vein Thrombosis | 1   | -            | 1             | -            |
| Splenic Vein Thrombosis | 1   | 1            | -             | -            |
| **TOTAL**            | **18** | **19** (61.29%) | **6** (19.35%) | **6** (19.35%) |

Table 3. Age Distribution of Various Splenic Lesions

HPE Number Sex Distribution

| HPE                  | Number | Male | Female |
|----------------------|--------|------|--------|
| Trauma               | 12     | 10   | 2      |
| Pyogenic Abscess     | 1      | 1    | -      |
| Sickle Cell Anaemia with Cholelithiasis | 3     | 2   | 1      |
| Idiopathic Thrombocytopenic Purpura | 4     | 2   | -      |
| Thalassemia          | 5      | 4    | 1      |
| Sickle Cell Anaemia  | 4      | 2    | 2      |
| Portal Vein Thrombosis | 1   | 1    | -      |
| Splenic Vein Thrombosis | 1   | 1    | -      |
| **TOTAL**            | **18** | **23** (74%) | **8** (25.8%) |

Table 4. Sex Distribution of Various Splenic Lesions

**Figure 1. Congestive Splenomegaly - Expansion of Red Pulp with Congested Blood Vessels and Areas of Haemorrhage (H&E, 100X)**
The abdomen is a very vulnerable site for abdominal injuries which is life threatening. Industrialization and increase in the number of automobile industries, road traffic accidents are harshly on the rise in developing countries like India. Blunt trauma abdomen is seen in approximately 79% of all abdominal injuries. The spleen and liver are the commonly injured following blunt trauma. In 60% of patients, the spleen is the only organ injured; with a mortality rate of 8.5%. Common clinical indications for total splenectomy is splenic trauma or haematological disorders.

M Deodhar et al⁶ analysed 56 patients who underwent splenectomy in a period of eight years. In the study the number of males was 49 and females 7 in number with male: female ratio of 7:1 and age range of 3 - 82 years, mean age being 33.5 years. In Fifty one specimens the cause of splenectomy was splenic trauma and five cases was due to haematological conditions.

Arshed MS et al⁷ studied fifty-five splenectomy specimens. The mean age was 26.7 years. The main indication for splenectomy was haematological lesions and trauma. Abhilash et al⁸ analysed 51 patients with splenic injury following blunt trauma with male predominance (94.1%). The causes for injury are road traffic accident (66.7%) followed by fall from height (25.5%).

Rehmani B⁹ analysed sixty-one patients of splenectomy specimens in 10 years duration. The age ranged from 17 - 79 years with twenty - six males and rest females. Hypersplenism was the commonest indication for splenectomy with eleven cases of primary hypersplenism and twenty - five cases of secondary hypersplenism. Portal hypertension was the major cause of secondary hypersplenism. Among haematological disorders; idiopathic thrombocytopenic purpura (ITP) was the commonest indication for splenectomy and common in young women of age range 20 - 35 years. The histopathology in all the cases of primary hypersplenism was congestive splenomegaly.

Another study by Glass et al¹⁰ showed that the indication for splenectomy was haematological disease in 47% of cases and trauma in 21% of cases. The most common haematological disorder was ITP.

In a study by Al-Salem¹¹ in 26 patients the indication for splenectomy was hypersplenism. Kumar et al¹² reported of 140 adult patients with splenectomy 88% being due to, idiopathic thrombocytopenic purpura (ITP).

In the present study 31 splenectomy cases were analysed. Common indications were trauma spleen (38.70%), congestive splenomegaly (58.06%). The various causes of congestive splenomegaly are sickle cell anaemia with cholelithiasis in (16.66%), sickle cell anaemia in (22.22%), Thalassemia (27.77%), Idiopathic thrombocytopenic purpura (22.22%) and single case of portal vein thrombosis and splenic vein thrombosis.

Trauma was more common in the age group of 41-60 years (16.21%), Hemoglobinopathies are more common in the age group of 1 - 20 years of age (45.16%) and Idiopathic thrombocytopenic purpura was more common in the age group of 1 - 20 years (12.90%). The male: female distribution in splenectomy cases was 2.8:1.

**DISCUSSION**

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