
بسم الله الرحمن الرحيم

Surgery of Spleen

Indications of Splenectomy

Indications for splenectomy:

A. Absolute:

1. Trauma:
   -if splenic preservation of no value.
2. Blood diseases:
   - Thalssemia
   - Hereditary spherocytosis.
   - ITP.
3. Wandering symptomatic spleen.
4. Aneurysm of splenic artery.
5. Cyst, abscess & tumors of spleen.

Indications of the Splenectomy

B. Relative:

1. Bilharzial splenomegaly if:
   - Manifested hypersplenism.
   - Splenic vein thrombosis.
   - Huge spleen- Mechanical disability.
2. Acquired hemolytic anemia.
3. Left sectorial portal hypertention.
4. Gaucher disease.
5. Part of an other operation:
   - portal hypertension.
   - cancer of stomach& pancrease.
6. Staging laparotomy: Hodgkiṅs lymphoma

to avoid: - Hypersplenism –radiation nephritis.

Hematologic disease for which splenectomy may be therapeutic

Surgery of the Spleen

Hematologic disease for which splenectomy may be therapeutic:.

A. Red- Cell disorders:

1. Hereditary spherocytosis.
2. Autoimmune idiopathic hemolytic anaemia.
3. Sickle cell disease.
4. Thalassemia.

B. Platelet disorders:

1. Idiopathic thrombocytopenic purpura.
2. Thrombotic thrmbocytopenic purpura.

Hematologic disease for which splenectomy may be therapeutic:.

C. White- cell disorders:

1. Lymphomas.
2. Leukemias (CLL & HCL).

C. Bone marrow disorders:

1. Mylofibrosis.
2. Myloproliferative disorders.

summary

The four main indications of a splenectomy are:

H. Haemorhage.
H. Hypersplenism.
H. Hodgkin's disease staging (historical).
H. Hodgepodge (i.e. Others).

Hypersplenism and Splenomegaly

Hypersplenism

- **Definition:**

  Hypersplenism is syndrome of an exaggeration of the normal splenic physiologic state.

The syndrome is characterized by:

- splenic enlargement,

-a decrease in circulating levels of one or more of the blood elements, and

- a compensatory increase in bone marrow activity.

- A degree of improvement following splenectomy .

Hypersplenism

- **Pathophysiology**

  One of the main functions of the spleen is to remove the damaged blood elements, and diseases of the spleen can cause an acceleration in this removal. If rapid destruction and removal involves one of the three elements — red blood cells, white blood cells, or platelets — the result is anemia, leukopenia, or thrombocytopenia, respectively. If this accelerated destruction involves all three blood elements, the process results in pancytopenia

Hypersplenism

- **Types of hypersplenism:**

  1- Primary hypersplenism:

  Primary hypersplenism is a diagnosis of exclusion, where identification of exaggerated splenic function is made without an apparent etiology. true primary hypersplenism is a rare entity usually found in women. Diagnosis can be made only after an extensive search for other causes.

Hypersplenism

- **Types of hypersplenism:**

2- Secandary hypersplenism:

Secondary hypersplenism refers to cases in which the disorder is found in association with a specific disease process causing some degree of splenomegaly.

Hypersplenism

- **Diagnosis of hypersplenism:**

*Clinically:

- pallor due to anaemia
- Frequent infections & oral ulceration noticed with neutropinea
- Petichae and ecchymosis due to thrmbocytopenia.

*Investigations:

- blood picture show low count of RBCs, leucocytes, and platletes.
- Bone marrow reveals pancellular hyperplasia.
- ^{51}C tagged red cell sequestration studies indicate that the spleen is the major site for the phagocytosis.

Splenomegaly

- The normal spleen cannot be palpated clinically. If the spleen is palpable under the costal margin, it is at least 3 times the normal size.
- Enlargement of the spleen varies from being just palpable to a huge size which may reach below the level of the umbilicus down to the right iliac fossa.
- Splenomegaly is sometimes confused with hypersplenism. Splenomegaly simply refers to the enlargement of the spleen from any cause. Hypersplenism refers to an excessive removal of the blood elements resulting in some form of cytopenia

Causes of Splenomegaly

- **I. Infections:**

A. Acute infections:

-hepatitis - typhoid - mononucleosis
-toxoplasmosis - cytomegalovirus – abscess.

B. Subacute infections:

- Bacterial endocarditis - tuberculosis
- brucellosis -malaria
- leishmaniasis - AIDS

C. Chronic infections:

- malaria - fungal disease - syphilis

Causes of Splenomegaly

- **II. Congestive:**

A. intra-hepatic portal hypertension:

- cirrhosis - congenital hepatic fibrosis
- haemochromatosis -Wilson's disease .

B. Pre-hepatic portal hypertension:

- portal vein thrombosis - obstruction
- atresia - cavernoma

C. post-hepatic:

- Budd-Chiari - congestive heart failure.

D. Segmental(left sided portal hypertension):

Splenic vein occlusion by:

- thrombosis - pancreatits - pancreatic neoplasm.
- splenic artery aneurysm - cyst

Causes of Splenomegaly

III. Haematological:

A. Haemolytic disorders:

* *congenital:*
  - a- cell membrane defect:
    - * hereditary spherocytosis.
    - * hereditary elliptocytosis.
  - b- Hb defect*:*
    - * Thalassaemia
    - * Sickle cell anaemia
* *Acquired:*
  - e.g. Autoimune haemolytic anaemia

B. Myeloproliverativ disorders:

- essential thrombocytopenia
- polycythaemia vera
- myeloid metaplasia

C. Miscellaneous:

- primary splenic hyperplasia
- megaloplastic anaemia.

Causes of Splenomegaly

- **IV. Neoplastic:**

A. Haematological malignancies:

- acute or chronic leukemia
- malignant lymphoma
- malignant histocytosis
- myelomatosis.

B. Primary intrinsic malignancies:

- lymphosarcoma
- fibrosarcoma
- angiosarcoma
- plasmocytoma

C. Intrinsic secondary malignacies:

- carcinoma
- melanoma.

D. Benign:

- hamartoma
- fibroma.
- Haemangiom
- lymphangioma

Causes of Splenomegaly

V. Inflammatory or Granulomatous:

- systemic lupus
- Sarcoidosis
- Felty's syndrome.
- rheumatic fever

VI. Storage disease:

- Gaucher's disease
- Niemann-Pick syndrome
- Wilsons disease
- histocytosis X

VII. Miscellaneous:

- Cysts: traumatic, congenital & parasitic
- others: hyperthyroidism

Splenomegaly

- Some patients with massive splenomegaly have hypersplenism as part of the indication for splenectomy. Almost all patients with splenomegaly who require surgery have either hypersplenism, splenic infarction, or splenic rupture as the precipitating indication for a splenectomy. Splenomegaly by itself seldom appears to be an appropriate indication for splenectomy..
- Most patients with hypersplenism do not have splenomegaly (more than 90%). Fewer than 10% of patients with splenomegaly have hypersplenism .

Causes of massive Splenomegaly

A. Tropical splenomegaly:

-Schistosomiasis - chronic malaria

- Kalaazar - Leishmaniasis.

B. Congestive splenomegaly:

- portal hypertension
- Splenic vein thrombosis

C. Haematologic:

- Thalassemia major
- chronic myelocytic leukaemia
- myelofibrosis.

D.Storage or metabolic:

- Gauchers disease
- Niemann- picks disease

Causes of tender Splenomegaly

- Splenic abscess.
- Splenic infarction.
- perisplenitis.
- splenic vein thrombsis
- splenic artery embolism.
- acute malaria.
- Typhoid fever.
- viral hepatitis.
- SABE

Asplenism & Hyposplenism

- **Definition:**

  Asplenism refers to the absence of normal spleen function and is associated with some serious infection risks.

  Hyposplenism is used to describe reduced splenic functions, but not as severly affecter as with asplenism.

Causes of asplenism & hyposplenism

A. Congenital:

- due to splenic agenesis
- very rare

B. Acquried:

1- post splenectomy
2- splenic atrophy as in:
    -sickle-cell disease
    -Coeliac disease
    - inflammatory bowel & collagen colitis
    - systemic amyloidosis
    - systemic lupus erythematosus
    - old age

Asplenism & Hyposplenism

- **Haematological changes in hyposplenism:**

Abnormal red cells:
- Target cells
- Pitted cells.

Red cell inclusions:
- Howell-jolly bodies
- Siderotic granules

Abnormal platelet morphology

Thrombothytosis

Leucocytosis:
- neutrophilia
- lymphocytosis
- monocytosis

Miscellaneous disorders

Splenic artery aneurysm

- Most common intra-abdominal site for aneurysm after abdominal aorta.
- Most common in women(87%), due to atherosclerosis.
- Congenital artery aneurysm can occur.

Splenic artery aneurysm

- Splenic artery aneurysm may occure as a complication of acute pancreatitis or pancreatic pseudocyst.
- Asymptomatic(83%); epigastric, left upper qudrant or left flank pain(17%).

Splenic artery aneurysm

- Rupture of splenic artery aneurysm may be intraperitoneal or into the stomach, colon and intestine.
- Rupture of the aneurysm is manifested by sudden abdominal pain & collapse.
- Plain x-ray show calcified lesion in 70% of cases, which rarely ruptured.
- Contrast CT, angiogram are needed.

Indications for surgery in SAA

1- > 2cm diameter.

2- Symptomatic aneurysm.

3- Anticipating pregnancy.

4- aneurysm during pregnancy should be operated before 3rd trimester.

Treatment:

- Splenectomy with ligation of artery proximal to aneurysm.

- Splenic artery embolisation under radiological guidance.

Splenic abscess

- It is uncommon but potentially fatal.
- Incidence is 0.7%.
- Precipitating factors:

- Endocarditis is commonest focous.
- AIDS.
- Polycythaemia.
- Sickle cell disease.
- Malignancy.
- Splenic vein thrombosis.
- Trauma.
- pancreatitis, Typhoid& pureperal sepsis

Splenic abscess

- Organisms responsible are polymicro.

- Clinical features:

- Fever.
- Malaise & weight loss
- Pain in left hypochondrial.
- Pain in left side of chest.
- Spleen when palpable is tender.
- Single or multiple abscess.

Splenic abscess

- Leucocytosis and US, CT or MRI study establish the diagnosis of splenic abscess.

- Treatment:

- Broad spectrum antibiotics.
- Percutaneous drainage.
- Laparoscopic/ or open splenectomy.

Splenic cysts

80% of all splenic cysts are pseudocysts caused by trauma, infection, infarction.

Worldwide 8% are due to hydatid cysts.

Classifications:

- A- CONGENITAL = Epidermoid cyst or epithelial cysts have an epithelial lining and are thus true cysts.Usually solitary. fluid may be clear or viscous dependent on whether contents are hemmorhagic, proteinaceous,fat or cholesterol containing.

- B- Vascular:

1- Hematoma.
2- Post-traumatic pseudocyst.
3- Cystic degeneration of infarct.
4- Secondary to V-B shunt.

- C-Infection/ inflamation:

1- Pyogenic abscess (0.1-0.7%).
2- Granulomatous infection e.g. TB.
3- Pneumocystis carinii infection.
4- Parasitic cyst (echinococcus).

- D- Cystic neoplasm:

1- Cavernous haemagioma.

2- Lymphangiomatosis.

3- Necrotic metastasis.

- CT finding:

- Sharply demarcated , unilocular round with a thin wall with attenuation similar to water.

- suspect hydatid if septated and have daughter cysts and if cysts seen in other organs.

- May have calcifications.

Splenic lymphoma

- Hodgkin's lymphoma:

- With combined modality treatment & improvement in the accuracy of imaging technology, surgical staging and splenectomy for Hodgkin's lymphoma are infrequently performed.

- Surgical intervention limited to retroperotineal LN sampling & splenectomy for isolated splenomegaly.

Splenic lymphoma

- Non Hodgkin's lymphoma:

- NHL is the most common malignant neoplasm of the spleen.

- Primary splenic lymphoma that confined to the spleen is uncommon (1%).

- The spleen is involved in 30-40% of patients as a result of spread from other sites.

Splenic lymphoma

- Non Hodgkin's lymphoma:

- Clinical presentation varies from vague constitutional symptoms to abdominal or pleuritic pain and early satiety related to splenomegaly .

- Thrombocytopenia, anemia & neutropenia are associated with the disease.

NH lymphoma

- CT typically reveals splenomegaly with solitary large mass but multiple masses may bee seen.

- Splenectomy is required to make definitive diagnosis and resection is indicated in patients with systemic disease and splenomegaly with cytopenia.

Questions ? ?


THANK YOU