Benign non cystic liver masses

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Solid Benign Neoplasms

- 10% to 20% of the population

- Familiarity with the clinical characteristics, natural history, imaging characteristics, and indications for surgery

Investigations

- can be adequately characterized by CT, ultrasound, and MRI.
- In unclear cases, serum tumor markers (e.g., AFP, CEA) and a search for a primary tumor in the case of suspected metastases.
- resection might be necessary to make a definitive diagnosis.
- Laparoscopic techniques for assessment, biopsy, and/or resection

3 Imp benign tumors

- LCA- Liver cell adenoma
- FNH- focal nodular hyperplasia
- Hemangioma

Liver cell adenoma (LCA)

- rare benign proliferation of hepatocytes .
- young women (aged 20 - 40 years)
- associated with steroid hormone use, such as chronic oral contraceptive pills (OCPs).
- The female-to-male ratio is approximately 11 : 1.
- usually singular but multiple lesions have been reported in 12% to 30% of cases.
- >/= 10 adenomata is termed adenomatosis.
- multiple adenomata are not associated with OCP use and do not have as dramatic a female preponderance.

Pathology

- cords of benign hepatocytes containing increased glycogen and fat.
- Bile ductules not observed.
- normal architecture of the liver is absent
- Hemorrhage and necrosis are seen.
- Molecular studies have recently identified genetic signatures associated with a higher risk of malignant transformation

Signs and symptoms

- Upper abdominal pain is common and may be related to hemorrhage into the tumor or local compressive symptoms.
- physical examination - unrevealing
- tumor markers are normal.
- Dramatic presentations with free intraperitoneal rupture and bleeding can occur.
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Investigations

- CT - well-circumscribed heterogenous mass that demonstrates early enhancement during the arterial phase.
- MRI scans -well-demarcated heterogenous mass containing fat or hemorrhage

Risks

- rupture, with potentially life-threatening intraperitoneal hemorrhage.
- malignant transformation.
- risk of rupture is related to size.
- risk of transformation is probably low

Management

- Patients with acute hemorrhage need emergent attention.
- I hepatic artery embolization - effective temporizing maneuver.
- Once stabilized and appropriately resuscitated, a laparotomy and resection of the mass are required.
- Symptomatic masses should be similarly resected.
- Patients with asymptomatic LCAs on OCPs can be watched for regression after stopping the OCPs,
- Behavior of LCAs during pregnancy has been unpredictable and resection prior to a planned pregnancy is usually recommended.
- Overall, the surgeon must compare the risks of expectant management with serial imaging studies and AFP measurements against those of resection.
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- Margin status is not important
- limited resections can be performed.
- The management of adenomatosis is controversial but large lesions should probably be resected because of the risk of rupture, whereas the risk of malignancy is low in lesions smaller than 5 cm.
- liver transplantation is necessary for aggressive forms of adenomatosis

Focal nodular hyperplasia (FNH)

- second most common benign tumor of the liver
- predominantly in young women.
- FNH is usually a small (<5 cm) nodular mass arising in a normal liver that involves the right and left liver equally.

Pathology

- The mass is characterized by a central fibrous scar with radiating septae,
- Microscopically, FNH contains cords of benign-appearing hepatocytes divided by multiple fibrous septae originating from a central scar.
- Typical hepatic vascularity not seen, but atypical biliary epithelium is found scattered throughout the lesion.
- The central scar often contains a large artery that branches out into multiple smaller arteries in a spoke wheel pattern

Nontypical forms

- Telangiectatic FNH, with or without atypia
- mixed hyperplastic-adenomatous
- Although these may have risks of rupture or malignant degeneration, this remains unclear.
- These FNHs occur more frequently in men
- more difficult to characterize radiologically

Etiology

- The cause not known, may be related to a developmental vascular malformation.
- Female hormones and OCPs have been implicated in the development and growth of FNH but the association is weak and difficult to prove.
- Occasional cases of resolution of symptoms after stopping OCPs have been reported.

Presentation

- incidental finding at laparotomy or, more commonly, on imaging studies.
- If symptoms are noted, they are most often vague abdominal pain.
- Physical examination - unrevealing.
- mild abnormalities of liver function.
- Serum AFP levels are normal.

Investigations

- . Contrast-enhanced CT and MRI have become accurate methods of diagnosing FNH.
- These scans usually demonstrate a homogeneous mass with a central scar that rapidly enhances during the arterial phase of contrast administration.
- When no central scar is seen-radiologic diagnosis is difficult differentiating from LCA or a malignant mass, especially fibrolamellar HCC.
- histologic confirmation is necessary and resection is recommended for definitive diagnosis.
- Fine-needle aspiration for the diagnosis of FNH has been recommended but is often unrevealing

Treatment

- most FNHs are benign and indolent tumors.
- Asymptomatic patients mostly remain for over long periods.
- Rupture, bleeding, infarction & malignant change rare
- The treatment depends on diagnostic certainty and symptoms.
- Asymptomatic patients- typical radiologic features- do not require treatment.
- If diagnostic uncertainty exists, resection may be necessary for histologic confirmation.
- Symptomatic patients should be thoroughly investigated to look for other pathology to explain the symptoms.
- Careful observation of symptomatic FNH with serial imaging is reasonable because symptoms may resolve in a significant number of cases.
- persistent symptomatic FNH or an enlarging mass Rx –resection with minimal morbidity and mortality

Hemangioma

- Hemangioma is the most common benign tumor of the liver.
- It occurs in women more than in men (3 : 1 ratio)
- mean age of approximately 45 years.
- Small capillary hemangiomata are of no clinical significance, whereas larger cavernous hemangiomata more often come to the attention of the liver surgeon .
- Cavernous hemangiomata have been associated with FNH and are also theorized to be congenital vascular malformations.
- The enlargement of hemangiomata is by ectasia rather than neoplasia. They are usually solitary, less than 5 cm in diameter, and occur with equal incidence in the right and left hemi livers.
- Lesions larger than 5 cm are arbitrarily called giant hemangiomata. Involution or thrombosis of hemangiomata can result in dense fibrotic masses that may be difficult to differentiate from malignancy. Microscopically, they are endothelium lined, blood-filled spaces separated by thin fibrous septae

Presentation

- Asymptomatic and found incidentally on imaging studies.
- Large compressive masses may cause vague upper abdominal symptoms d/t Rapid expansion or acute thrombosis
- Spontaneous rupture of liver hemangiomata is exceedingly rare.
- syndrome of thrombocytopenia and consumptive coagulopathy known as Kasabach-Merritt syndrome.

Investigations

- LFTs and tumor markers are usually normal in liver hemangiomata.
- Radiologic investigation can make the diagnosis reliably in most cases.
- CT and MRI are usually sufficient if a typical peripheral nodular enhancement pattern is seen.
- Isotope-labeled red blood cell scans are an accurate test but are rarely necessary if high-quality CT and MRI are available.
- Percutaneous biopsy of a suspected hemangioma is potentially dangerous and inaccurate. Therefore, biopsy is not recommended

- benign; remain stable over long periods of time, with a low risk of rupture or hemorrhage.
- Growth and development of symptoms do occur, however, occasionally requiring resection.
- never been a report of malignant degeneration of a liver hemangioma.
- An asymptomatic patient with a secure diagnosis can therefore be simply observed.
- Symptomatic patients - thorough evaluation - for alternative explanations for the symptoms, but resection if no other cause is found.
- Rupture, significant change in size, and development of the Kasabach-Merritt syndrome are indications for resection.
- diagnostic uncertainty, resection may be necessary to make a definitive diagnosis. Resection of liver hemangiomata should be performed, with minimal morbidity and mortality.
- The preferred approach to resection is enucleation with arterial inflow control, but anatomic resections may be necessary in some cases.
- Surgery on large central hemangiomata -significant morbidity

- Liver hemangiomata in children are common.
- multifocal and can involve other organs.
- Large hemangiomata can result in congestive heart failure
- secondary to arteriovenous shunting.
- Untreated symptomatic childhood hemangiomata are associated with a 70% mortality.
- almost all small capillary hemangiomata resolve.
- Symptomatic childhood hemangiomata may be treated with therapeutic embolization; medical therapy should be initiated for congestive heart failure.
- Resection may be necessary for symptomatic lesions or rupture.

Other Benign Tumors

- Macroregenerative nodules, previously known as adenomatous hyperplasia, are single or multiple, well circumscribed, bile-stained, bulging surface nodules that occur primarily in cirrhotics and result from the hyperplastic response to chronic liver injury.

- These lesions have malignant potential and can be difficult to distinguish from HCC.
- Nodular regenerative hyperplasia (NRH) is a benign diffuse micronodular (usually <2 cm) process associated with lymphoproliferative disorders, collagen-vascular diseases, and the use of steroids or chemotherapy.
- NRH has no malignant potential and is not associated with cirrhosis. Biopsy may be necessary to distinguish these focal nodules from malignancy.

- Fatty tumors of the liver include primary lipomas, myelolipomas (which contain hematopoietic tissue), angiolipomas (which contain blood vessels), and angiomyolipomas (which contain smooth muscle).
- Focal fatty change in the liver can be confused with a neoplastic process and is becoming more common with improved imaging and the increasing incidence of hepatic steatosis.
- Benign fibrous tumors of the liver can become large and symptomatic, requiring resection.

- Inflammatory pseudotumors of the liver are localized masses of inflammatory cells that can mimic a neoplasm.
- The cause unknown, but may be related to thrombosed vessels or old abscesses.
- Other extremely rare benign hepatic tumors include leiomyomas, myxomas, schwannomas, lymphangiomas, and teratomas.
- Intrahepatic biliary cystadenomas or bile duct adenomas are rare, but can cause biliary symptoms.
- Biliary hamartomas or biliary hyperplasia are common and are often seen as small white surface lesions that can mimic small metastatic tumors at abdominal exploration.
- Adrenal and pancreatic rests have also been found in the liver