Benign liver lesions

Alastair J Hayes

Damian J Mole

Abstract

Benign liver lesions are common and can pose a diagnostic challenge due to the difficulty in differentiating them from malignant hepatic lesions. They seldom present as an emergency. Most benign liver lesions are asymptomatic and are frequently detected incidentally during investigations for other conditions. Symptomatic lesions usually cause non-specific symptoms. Liver function tests are usually within the normal range, and diagnosis is established by abdominal ultrasound, computed tomography, magnetic resonance imaging or positron emission tomography. Further diagnostic modalities may include hepatic angiography and diagnostic laparoscopy with intraoperative ultrasonography. Biopsy or aspiration in the diagnosis of benign disease of the liver needs careful thought and multidisciplinary discussion, and is contraindicated in certain scenarios due to the risk of bleeding and tumour seeding. Management strategies may vary from simple reassurance, lifestyle advice and surveillance imaging, through to complex hepatic resections or liver transplantation. Awareness of the natural history, clinical presentation and management strategies will ensure appropriate initial diagnostic work-up and prompt referral to a specialist hepatobiliary unit.

Keywords Benign hepatic tumours; benign liver lesions; focal nodular hyperplasia; haemangioma; hepatocellular adenoma; liver abscess; liver cysts

Introduction

Benign lesions of the liver are common and are frequently discovered during investigations for unrelated intra-abdominal conditions. Most are asymptomatic, but chronic non-specific symptoms are occasionally encountered; acute presentations are rare, but may require immediate attention. In general, liver biochemistry is normal and does not provide definite diagnostic clues, but prompts towards benign disease. Diagnosis is established radiologically by ultrasonography (US), computed tomography (CT), magnetic resonance imaging (MRI), or positron emission tomography (PET) alone, or in combination. Occasionally, these are complemented by diagnostic laparoscopy and laparoscopic US. Tissue biopsy or aspiration cytology should not be necessary for most benign lesions, and is clearly contraindicated for others (e.g. haemangiomas, echinococcal cysts). Biopsy should be undertaken only after discussion in a specialist hepatobiliary multidisciplinary team meeting for those patients who will not be compromised by the risk of bleeding or tumour seeding. Management strategies may vary from simple reassurance, lifestyle advice and surveillance imaging, through to complex hepatic resections or liver transplantation. Awareness of the natural history, clinical presentation and management strategies will ensure appropriate initial diagnostic work-up and prompt referral to a specialist hepatobiliary unit.

Classification

A detailed classification of the benign conditions of the liver is shown in Table 1. Most of these lesions are rare and those encountered in clinical practice usually are haemangiomas, benign liver cysts, hepatocellular adenomas, focal nodular hyperplasia and bile duct adenomas. The main characteristics for the most common lesions are summarized in Table 2.

Solid benign lesions of the liver

Haemangioma

Incidence: haemangiomas, also known as cavernous haemangiomas, are the commonest benign lesions of the liver, with

Classification of benign conditions of the liver

Benign tumours	Abscesses	Cysts
Epithelial tumours	Pyogenic liver abscess	Hydatid cyst
• Hepatocellular	Amoebic abscess	Simple cysts
○ Nodular transformation		Polycystic liver disease
○ Focal nodular hyperplasia		Cystadenoma
○ Hepatocellular adenoma		
• Cholangiocellular		
○ Bile duct adenoma		
○ Biliary cystadenoma		
Mesenchymal tumours		
• Tumours of adipose tissue		
○ Lipoma		
○ Myelolipoma		
○ Angiomyolipoma		
• Muscle tumours		
○ Leiomyoma		
• Tumours of blood vessels		
○ Infantile haemangioendothelioma		
• Haemangioma		
○ Hereditary haemorrhagic telangiectasia		
○ Peliosis hepatis		
• Tumours of mesothelial tissue		
○ Benign mesothelioma		
Mixed mesenchymal and epithelial tumours		
• Mesenchyma hamartomas		
• Benign teratoma		
Miscellaneous		
• Adrenal rest tumour		
• Pancreatic heterotopia		
• Inflammatory pseudotumour		

Table 1

Alastair J Hayes *MRCS(Ed) is a Research Fellow in Clinical Surgery at the University of Edinburgh, UK. Conflicts of interest: none declared.*

Damian J Mole *FRCS(Ed) is an MRC Senior Clinical Fellow and Honorary Consultant HPB Surgeon at the Royal Infirmary of Edinburgh, UK. Conflicts of interest: none declared.*

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Summary of main characteristics of benign liver lesions

Lesion	Prevalence	Malignant potential	Management
Haemangioma	0.4–7.3% at autopsy[1]	None reported	• Observation • Enucleation/resection • OLT for unresectable lesions
Bile duct adenoma	Four cases in 50,000 at autopsy[2]	None reported	• Excision Bx for definite diagnosis
Bile duct hamartoma	0.9% of children and 5.6% of adults at autopsy[3]	None reported	• Excision Bx for definite diagnosis
Nodular regenerative hyperplasia	2.6%[4]	None reported	• None for asymptomatic patients • OLT for liver failure
Focal nodular hyperplasia	0.4–3%[5]	None reported	• None for asymptomatic patients, with firm diagnosis • Hepatic resection
Hepatocellular adenoma	3-4/100,000 per year[a]	Yes – more commonly amongst males[6]	• Hepatic resection • OLT for unresectable lesions
Cystadenoma	Rare (4.6% of intrahepatic cysts of bile-duct origin)	~30%[7]	• Complete resection/Ablation
Polycystic liver disease	<0.01% (PCLD)[8] 0.1–0.2% (ADPKD)[8]	None reported	• None for asymptomatic patients • Fenestration • Hepatic resection and fenestration • OLT for selected patients • Somatostatin
Hydatid cyst	~10 cases per year in England and Wales with hepatic cysts (in the indigenous population) between 1981 and 83[b,9]	None reported	• Surgery for cyst removal • Anthelmintic drugs
Pyogenic liver abscess	~2.3/100,000 per year[b] (UK adult population)[10]	None reported[c]	• Percutaneous treatment (drainage or aspiration) and broad spectrum antibiotics • Surgical drainage for selected patients
Simple liver cyst	18% of adults. Increasing prevalence with age[11]	None reported	• None for asymptomatic patients • Deroofing • Percutaneous aspiration and sclerotherapy
Amoebic liver abscess	More common in countries with poor sanitation. 10 males: one female. Rare in children.	None reported	• Metronidazole • Percutaneous aspiration/drainage and metronidazole • Open drainage for complicated disease

ADPKD, autosomal dominant polycystic kidney disease; Bx, biopsy; CECT, contrast-enhanced computed tomography; CT, computed tomography; MRI, magnetic resonance imaging; OLT, orthotopic liver transplantation; PCLD, polycystic liver disease; PET, positron emission tomography; USS, ultrasonography.

[a] Incidence in patients using oral contraceptives.

[b] Incidence.

[c] May be caused by underlying malignancy.

Table 2

an estimated prevalence from autopsy reports of 0.4–7.3%.[1] They are most frequently encountered between the third and fifth decade of life and are more common in females. Haemangiomas are randomly distributed in the liver. Those larger than 4 cm in diameter are called giant haemangiomas (some authors prefer to use a size cut-off of 5 cm or 10 cm for this classification).

Pathogenesis and pathology: the origin of haemangiomas is debated. They are considered to be benign congenital hamartomas that grow slowly from birth by progressive ectasia. Haemangiomas have a honeycomb appearance and are encapsulated by a rim of fibrous tissue, with a clear dissection plane between the lesion and normal parenchyma. Microscopically, they are composed of cystically dilated vascular spaces, lined by endothelial cells and separated by fibrous septa. A possible relationship with female sex hormones has been suggested, although the exact pathophysiology remains unclear.

Presentation: most haemangiomas are asymptomatic and are generally discovered as incidental findings during imaging investigations or surgery for other reasons. However, patients with subcapsular or large lesions may present with chronic right

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