CASE - 1

Nontoxic megacolon refers to colonic dilatation without mural abnormality and signs of colon toxicity. Although the definition of a megacolon has varied in the literature, most use the measurement of greater than 12 cm for the caecum, 8 cm for the ascending and transverse colon, and 6.5 cm for the rectosigmoid region as standard.

Pathology

Nontoxic megacolon can be divided into acute (pseudo-obstruction) and chronic (congenital, acquired, and idiopathic) causes.

Aetiology

- adynamic ileus
- mechanical large bowel obstruction
- faecal impaction
- Ogilvie's syndrome
- sigmoid volvulus and caecal volvulus
- Hirschsprung disease
- amyloidosis
- laxative abuse

Differential diagnosis

Nontoxic megacolon contrasts with toxic megacolon, an acute complication accompanied by mural abnormalities such as thickening, loss of haustral folds, pneumatosis or free gas.

CASE - 2

Adenomyomatosis of the gallbladder is a hyperplastic cholecystosis of the gallbladder wall. It is a relatively common and benign cause of diffuse or focal gallbladder wall thickening, most easily seen on ultrasound and MRI.

Epidemiology

Adenomyomatosis is relatively common, found in ~9% of all cholecystectomy specimens [6]. It is typically seen in patients in their 5th decade. The incidence increases with age, presumably the result of protracted inflammation (see below). There is a female predilection (M:F=1:3).

It is most often an incidental finding and usually requires no treatment. It may be found more often in chronically inflamed gallbladders (which are at higher risk for carcinoma), but it is not a premalignant lesion in itself [6].

Clinical presentation

Adenomyomatosis per se is usually asymptomatic. It is, however, frequently associated with chronic biliary inflammation, most commonly gallstones (25-75%), but also seen in cholesterolosis (33%) and pancreatitis [2].

Pathology

Adenomyomatosis is one of the hyperplastic cholecystoses. There is hyperplasia of the wall with the formation of Rokitansky-Aschoff sinuses (intramural diverticula lined by mucosal epithelium) penetrating into the muscular wall of the gallbladder, with or without gallbladder wall thickening. Cholesterol accumulating in the Rokitansky-Aschoff sinuses becomes increasingly concentrated leading to crystal precipitation and calcification [10].

Radiographic features

Three morphological types of adenomyomatosis are described:

- fundal (localised)
- segmental (annular)
- generalised (diffuse)

Ultrasound

- mural thickening (diffuse, focal, annular)
    - segmental/annular form is especially difficult to distinguish from gallbladder carcinoma
- comet-tail artifact: echogenic intramural foci from which emanate V-shaped comet tail reverberation artifacts are highly specific for adenomyomatosis, representing the unique acoustic signature of cholesterol crystals within the lumina of Rokitansky-Aschoff sinuses [4]

CT

- abnormal gallbladder wall thickening and enhancement are common but non-specific CT features of adenomyomatosis
- Rokitansky-Aschoff sinuses of sufficient size can be visualised; a CT rosary sign has been described, formed by enhancing epithelium within intramural diverticula surrounded by the relatively unenhanced hypertrophied gallbladder muscularis
- calcific foci may develop in the Rokitansky-Aschoff sinuses [10]

MRI

MRCP is the technique usually employed for the gallbladder and biliary tree characterisation. Imaging features include:

- fluid-filled intramural diverticula/cysts [9]

        - pearl necklace sign refers to the characteristically curvilinear arrangement of multiple rounded hyperintense intramural cavities visualised on T2-weighted MR imaging and MRCP [4]
- mural thickening
- focal sessile mass
- hourglass configuration in annular types [5]
- absent extra-gallbladder infiltration [8]

Signal characteristics

Rokitansky-Aschoff sinuses can have a variable appearance in the one gallbladder depending on bile concentration [8]:

- T1: low signal to high signal with increasing bile concentration
- T2: high signal to low signal with increasing bile concentration
- T1C+: no enhancement

Nuclear medicine

PET-CT

Metabolic characterisation with FDG PET has been suggested as a useful adjunct in problematic cases [4], but there have also been cases with increased uptake in areas of adenomyomatosis, leading to false positive results [7].

Treatment and prognosis

Cholecystectomy may be performed as a result of one or more of the following:

- patient symptomatic with right upper quadrant pain (often due to gallstones)
- appearances (especially when focal) may be difficult to distinguish from malignancy

Differential diagnosis

General imaging differential considerations include:

- gallbladder carcinoma
- Phrygian cap
- gallbladder polyp (cholesterol polyp)
    - cholesterolosis: mucosal hyperplasia with the accumulation of cholesterol esters and triglycerides in the lamina propria macrophages (cf. intraluminal accumulation seen in adenomyomatosis)
- cholelithiasis
- papillomatosis [4]

Exclusion of gallbladder cancer may be most problematic in segmental and focal cases. Focal adenomyomatosis may appear as a discrete mass, known as an adenomyoma.