Tuberculosis (TB) caused by the bacteria Mycobacterium Tuberculosis is a major cause of morbidity and mortality worldwide. According to the World Health Organisation two billion people are infected with TB in its latent form and in 2011, 8.7 million new cases of active infection were reported, with 1.4 million deaths attributed to this disease. Although 95% of cases of active TB occur in middle to low income countries, the incidence of disease is on the rise in developed countries.1,2

Risk factors for TB include malnutrition, diabetes, alcohol excess and old age, but the principle reasons attributed to the shift in disease demographic in developed countries is due to migration from regions of the world with high prevalence of TB. IV drug abuse, increased incidence of immune-compromised patients from both iatrogenic sources and due to co-infection with the human immunodeficiency virus (HIV).3,4 HIV has been a problem since the mid 1980s and is particularly important because it is one of the major reasons for the emergence of drug resistant TB.1,5

TB can affect any part of the body but the most common organ affected is the pulmonary tract. Pulmonary TB is highly infectious, spreading from person to person through the air. Abdominal TB, the subject of this review, only accounts for 1-3% of all cases of TB and creates 12.36% of all extra pulmonary disease.6

Although the incidence of abdominal TB is on the rise, it is still a rare diagnosis to make and can mimic other more important common pathology, making it difficult to recognise. The abdominal form is most commonly seen in the 25-45 years age group, with an equal incidence in both sexes. The routes of dissemination into the abdomen include haematogenous spread from a primary lung focus, via lymphatics from infected nodes, organ to organ spread or from ingestion of infected material. A high index of suspicion is important to help make the diagnosis.7

The clinical presentation of abdominal TB can be acute or chronic. Symptoms include fever, weight loss, abdominal pain, distension and diarrhoea. Fatigue, malaise and chronic. Symptoms include fever, weight loss, abdominal pain, distension and diarrhoea. Fatigue, malaise and

Radiologically it is difficult to distinguish between peritoneal carcinomatosis and TB, often histological confirmation is required. CT is reported to have a sensitivity of 69% for predicting peritoneal TB. Three disease patterns in the peritoneum are described: wet, fibrotic fixed, and dry plastic types. The wet form manifests as high density free or loculated fluid within the peritoneal cavity. The Hounsfield unit (HU) of the fluid is higher than simple ascites due to increased protein and cellular material. The approximate values are in the range of 20-45 units. Imaging features suggestive of fibrotic fixed type include large omental masses, tethered bowel loops and ascites with septations and peritoneal nodularity. In the dry plastic form of the disease, the peritoneal reflections are often thickened and enhancing, with tubercles and adhesions. In the pelvis, TB can have a similar appearance to pelvic inflammatory disease in the pelvis. Other diseases that can have similar appearance on imaging are peritonitis and carcinomatosis.10,11

TB can affect any part of the alimentary canal; however, involvement of stomach, duodenum and colon are infrequent. Approximately 80-90% of bowel TB affects the ileocaecal region (figure 4). The ileocaecal region has the highest abundance of lymphoid tissue and relative stasis; it is thought that this makes it the most optimal area for the tuberculous bacilli to colonise. On CT there is usually chronic, with patients developing progressive abdominal swelling and pain, coinciding with progressive ascites (figures 2 and 3). The presentation is usually chronic, with patients developing progressive abdominal swelling and pain, coinciding with progressive ascites (figures 2 and 3).
ease in more proximal small bowel, has also been reported. There is also usually associated lymphadenopathy in the adjacent mesentry. The major differential diagnosis that has a similar clinical presentation and similar imaging features is inflammatory bowel disease. This can have a similar appearance on imaging. Histology obtained via colonoscopy is often the route to make a diagnosis. Complications of bowel TB include obstruction and fibrosis with retraction of the caecum.15,16

The role of CT is often very limited in the diagnosis of gastric and duodenal TB. The usual clinical manifestation of this disease includes gastritis and dyspepsia. Pathological gastric wall thickening, ulcers and soft tissue mass lesions are the usual findings on imaging but diagnosis of upper abdominal TB is frequently made from endoscopy and patients often do not have CT imaging, unless there is concern for a complication such as perforation. On CT, gastric TB can mimic limits plastica. TB of the colon clinically and on imaging manifests as colitis and a diagnosis is usually after colonoscopy.15,17

The CT image feature of hepatic TB is non-specific and other differential diagnosis such as metastasis, infections, lymphoma and sarcoidosis need to be considered. Histological or serological confirmation plays an important role in accurate diagnosis. The radiological image features of hepatic TB have been reviewed by several groups. On imaging, parenchymal TB has been classified as: miliary type, miliary with calcification and nodular type. Incidence of tuberculosis cholangitis has also been reported. Miliary hepatic TB presents as multiple hypo-attenuating lesions measuring 0.6-1.8cm in size with no peripheral enhancement. Miliary calcification is seen as small hyperattenuating foci within hypodense lesions. The nodular form of TB presents as hypodense lesions with peripheral enhancement. TB cholangitis manifests as hepatomegaly, dilated ducts, and enlarged nodes in the hepatic porta. Tuberculomas tend to calcify, and in the presence of calcified granulomas at CT in the absence of primary neoplasia, TB should be considered in the differential diagnosis.15,19

In the spleen and kidneys, TB presents as hypodense mass lesions with organomelay.20 Adrenal TB will clinically present as an Addisonian type crisis with bilateral hypodense adrenal mass lesions.20

TB is a major cause of morbidity and mortality worldwide. Although still an often uncommon diagnosis in the West, in developed countries it is increasingly becoming more prevalent. The imaging features are non-specific and often mimic more common diagnosis, but in at-risk groups, within the correct clinical context, it is an important diagnosis to consider in one’s differential.

References

FIGURE 3
Abdomen CT scan showing loculated fluid collection around liver in TB.

FIGURE 4
Abdomen CT scan showing ileocaecal mass in TB which mimics malignancy.