an ovarian fibroma associated with ascites in the absence of a pleural effusion than a pleural effusion in the absence of ascites. In our case, it is certainly possible that drainage of the pleural effusion prior to surgery could have succeeded in drawing off a small ascitic collection by virtue of the putative trans-diaphragmatic continuity between the pleural and peritoneal spaces.

Our management in this instance with formal intercostal drainage and tetracycline

pleurodesis represented a pragmatic and pre-operatively desirable approach to an apparently malignant condition which proved unexpectedly benign at pelvic surgery.

Final diagnosis

Atypical Meigs syndrome.

Keywords: Meigs syndrome; ovarian tumour

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Omental cake – cause?

A I Rhodes, R Joarder, A Al-Kutoubi

A 45-year-old woman presented to her general practitioner with abdominal and bilateral loin pain. She had recently developed diarrhoea and on examination was found to have a pelvic mass. Initial investigations with ultrasound and a barium enema were followed by a computed tomography (CT) scan of the abdomen and pelvis. Two slices from the CT scan are shown in figures 1 and 2.

Figure 1 CT slice through the abdomen, taken following ingestion of oral contrast and dynamically enhanced with intravenous contrast

Figure 2 CT slice through the pelvis

**Department of
Diagnostic Radiology,
St Mary's Hospital,
Praed Street, London
W2 1NY, UK**
AI Rhodes
R Joarder
A Al-Kutoubi

Correspondence to Dr AI Rhodes, 12 Camel Grove, Kingston-Upon-Thames, Surrey KT2 5GR, UK

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Questions

- 1 What are the CT findings?
- 2 What is the differential diagnosis of these appearances?

Answers

QUESTION 1

The scan shows a grossly abnormal and thickened omentum, giving the appearance of an 'omental cake' (figure 1, arrow). The ascitic fluid present is, in places, encased by the thickened peritoneum giving the impression of cystic masses, particularly in the pelvis (figure 2, arrow).

QUESTION 2

The differential diagnosis of omental cakes found on CT scanning is shown in the box.^{1 2}

Discussion

Peritoneal thickening is the second most common CT manifestation of intraperitoneal tumour spread, found in 62% of cases in one series.¹ The most common manifestation was found to be ascites (74%), of which 46% was loculated ascites.

Intraperitoneal tumour spread takes place via four mechanisms³:

(a) *Direct spread along peritoneal surfaces* Tumours of prostate, ovary, uterus and kidney spread along the adjacent visceral peritoneum. These may go on to involve the bowel wall. Gastric, pancreatic and colonic carcinomas spread directly along the gastrocolic ligament and transverse mesocolon.

(b) *Peritoneal seedlings* are carried by the natural flow of the intraperitoneal fluid.⁴ This mechanism of spread is facilitated by the presence of ascites. The sites most commonly involved are those where ascites pool, thus allowing seedlings to attach and grow. These sites include the

Figure 3 CT slice through the abdomen, taken following ingestion of oral contrast

Omental cakes: differential diagnosis

- malignant: ovarian, gastric, colonic, lymphoma, etc
- inflammatory: tuberculosis, Crohn's disease, phlegmonous pancreatitis
- benign: sclerosing mesenteritis, desmoid fibroma

pouch of Douglas, right hemi-diaphragm, right para-colic gutter and the omentum. The CT feature of early omental involvement is streaky mesenteric fat secondary to soft tissue permeation with tumour. Late features include enhancing nodule and omental cakes. Omental cakes have been recognised in a wide range of malignancies (box), but are classically associated with ovarian carcinoma. However, early omentectomy used in the management of these cases, has reduced the frequency of omental cake as a clinical sign in ovarian carcinoma.

(c) *Lymphatic extension*, most commonly in the case of lymphoproliferative disorders.

(d) *Haematogenous spread* from distant sites such as breast, lung and melanoma.

The cytological diagnosis made in this case was of a high-grade non-Hodgkin's lymphoma. The patient responded well to treatment with CHOP chemotherapy as seen on her follow-up CT scan (figure 3). This shows that the omental cake seen on the pre-treatment scan (figure 1) has disappeared.

Over 50% of patients with non-Hodgkin's lymphoma present with mesenteric nodal disease but only 1.4% have direct omental involvement.⁵

CT scanning is a precise, noninvasive and reproducible method of detecting peritoneal disease. Masses as small as 1–2 cm and loculated malignant ascites can be readily shown. Abdominal lymphadenopathy is detected with an accuracy of 72–90%.⁶ The radiological assessment of patients with suspected mesenteric malignancy should begin with a CT scan of the abdomen and pelvis. Analysing the pattern of peritoneal involvement may help to trace the source of the primary.

Final diagnosis

Non-Hodgkin's lymphoma.

Keywords: omental cake; non-Hodgkin's lymphoma

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