Abnormal abdominal CT scan following cholecystectomy

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A 65-year-old woman presented with a six-week history of a painful right loin swelling that had failed to resolve despite several courses of oral antibiotics. Ten months earlier she had undergone elective cholecystectomy following recurrent episodes of acute cholecystitis. A laparoscopic approach was attempted but this was converted to an open operation when an empyema of the gallbladder with dense adhesions was encountered. There was no recognised spillage of bile or stones at surgery. Following the operation, she developed a discharge from the wound, which grew *Klebsiella*. This persisted for several months and was managed with courses of oral antibiotics and dressings.

Examination revealed a febrile, unwell woman, with a large tender swelling over the right loin. A computed tomography (CT) scan was performed (figure). The swelling was incised and drained 1.1 litre of purulent material which grew *Escherichia coli* and *Klebsiella*, and two solid fragments which were submitted for biochemical analysis. She received a course of intravenous antibiotics, following which she made a good recovery and was discharged home six days later.

Questions

1 What abnormality does the CT scan show?
2 What is the underlying cause of this complication, and what is the nature of the solid fragment?
3 What is the significance of the microbiology culture results?
Answers

QUESTION 1
The CT scan shows a large homogenous mass in the right posterolateral abdominal wall, representing an abscess. The arrow indicates a radiodense fragment within the abscess.

QUESTION 2
The abscess has been caused by a gallstone. The solid fragment was shown on biochemical analysis to contain bile pigments.

QUESTION 3
The repeated growth of E coli and Klebsiella from both the postoperative wound discharge and the abscess contents, indicated an intra-abdominal rather than cutaneous source of sepsis. Delikaris et al found that E coli and Klebsiella species comprised the majority of recovered organisms in positive bile cultures.1

Discussion
In this case, it is not clear how the gallstones reached the retroperitoneal space: recurrent episodes of acute cholecystitis may have resulted in adhesions to the posterior abdominal wall followed by a localised perforation releasing gallstones into the retroperitoneum. Alternatively, there may have been some spillage of gallstones at the time of surgery, which subsequently migrated into the retroperitoneal space.

This is not a complication that has been previously described, although retained gallstones following cholecystectomy are a recognised source of complications. These include port site abscesses, both at the extraction port following perforation on removal, and at accessory port sites as a late complication of stones retained within the peritoneal cavity. For this reason it is recommended that any stones spilled during open cholecystectomy are removed when possible. At laparoscopic cholecystectomy, however, the complication rate of retained stones is not sufficiently high to justify conversion to an open operation solely to complete stone retrieval, although a course of broad-spectrum antibiotics is recommended.

The chemical composition of the retained stone is of some significance. The majority of stones containing bilirubinate also contain viable bacteria, whereas pure cholesterol stones seldom do. This point is mainly theoretical as most stones are mixed, and the composition cannot be known with certainty at the time of surgery.

In conclusion, although we are uncertain of how the gallstones came to be in the retroperitoneum, we believe the important lesson to be learnt here is that retained gallstones can cause significant infective sequelae and therefore should be sought if suspected, and removed if possible.

Final diagnosis
Retroperitoneal abscess resulting from gallstones retained after cholecystectomy.

Keywords: gallstones, retroperitoneal abscess, cholecystectomy

Learning points
- gallstones are a recognised cause of retroperitoneal abscess
- effort should be made to retrieve spilled gallstones
- antibiotic cover is required if gallstones are spilt
- bacteriology results are important in localising the origin of an infection
- gallstone composition may determine infectivity