CASE REPORT

Mesenteric pseudocyst of the transverse colon: unusual presentation of more common pathology

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Accepted 1 October 2014

SUMMARY

A 72-year-old man presented to the hospital with a cyst in the abdominal cavity as the main finding obtained by abdominal CT. The cyst measured 13.5×9 cm and was located near the proximal wall of the body of the stomach. Endoscopic ultrasonography revealed that, the size of the cyst was 8.6×8.8 cm and that most of it was anechoic. However, partially heterogeneous and hypoechoic solid portions and a septum were detected. This cystic lesion was separated from the stomach wall and pancreas. Surgical resection was performed. The final histopathological test results showed that the cystic mass originated from the mesentery of the transverse colon, and the cyst was diagnosed as mesenteric pseudocyst because the cystic wall was composed of granulation tissue without lining epithelial cells.

BACKGROUND

Mesenteric cyst is a relatively rare tumour arising within the abdominal cavity that originates from the mesentery or the surrounding area and has no linkage with retroperitoneal organs.^{1 2} Although it may occur in any part of the mesentery, it is located in the mesentery of the small intestine and mesocolon in most cases.^{2 3} Mesenteric cysts are frequently discovered by chance on ultrasonography or CT because of the absence of symptoms, with occasional discovery when patients report of the symptoms associated with compression or complications of the cysts.^{1 3–5} Although ultrasonography and CT are the best diagnostic modalities, accurate diagnosis prior to surgery is difficult because the origin of the lesion or the characteristics of the internal aspects of the cyst cannot be easily determined by radiological examination alone.^{3 4}

We report our experience with a patient who was diagnosed as having a mesenteric (non-pancreatic) pseudocyst that originated from the mesentery of the transverse colon as the result of a surgical procedure performed for the purpose of diagnosis and treatment. The patient was initially diagnosed as having a gastrointestinal stromal tumour (GIST) on CT, but the diagnosis was changed into a non-pancreatic mucinous cystic neoplasm (MCN) on endoscopic ultrasonography (EUS) performed to determine the characteristics of the lesion and the presence of malignancy.

CASE PRESENTATION

The 72-year-old man was hospitalised for evaluation of a cyst discovered by chance on abdominal CT performed as a part of a health check-up. The

patient did not display particular symptoms and had no history of external injury to the abdomen or prior surgery. The patient was being treated with an antihypertensive drug for high blood pressure.

His vital signs included blood pressure of 140/80 mm Hg, pulse 80 bpm, respiratory rate 20 breaths/min, and body temperature 37.2°C. Results of the physical examination and blood test were normal. A cystic mass with a size of 13.5×9 cm was located in the vicinity of the rear wall of the stomach, and a portion inside the cyst showed non-enhancement in a heterogeneous pattern on abdominal CT. This cyst had preserved mucous membranes with a well-defined boundary. Imaging findings suggested a gastric submucosal tumour (SMT) such as GIST, which is usually accompanied by a haemorrhagic and cystic changes associated with necrosis (figure 1). Upper gastrointestinal endoscopy and EUS were performed to more definitively confirm the origin and the characteristics of the cystic mass. The cystic mass discovered on CT was observed in the form of a SMT in the rear wall of the mid-lower portion of the body of the stomach in the upper gastrointestinal endoscopy (figure 2), and this cyst displayed a macrocystic lesion measuring 8.6×8.8 cm on EUS. Although the internal aspect of the cyst was mostly anechoic, a partially heterogeneous and hypoechoic solid portion and a septum were observed (figure 3). Since the gastric wall layer in the vicinity of this cystic lesion was well preserved, this lesion was deemed to have originated outside the gastric wall and was separated from the pancreas. Therefore, based on the findings of EUS, there was a high probability that this was a mucinous cystadenoma occurring in the retroperitoneum or mesentery. However, this is rarer than an SMT such as GIST, and distinction from mucinous cystadenocarcinoma was necessary because it contained a solid portion inside the cyst.

INVESTIGATIONS

CT

The cyst showed heterogeneous non-enhancement pattern near the stomach with preserved mucous membranes. It suggested a SMT or other haemorrhagic cyst.

Upper gastrointestinal endoscopy/EUS

Compared with CT, upper gastrointestinal endoscopy excluded gastric mucosal invasion of the cyst, grossly. Furthermore, EUS revealed the cystic mass was detached from gastric wall and pancreas and had some solid portion and a septum.

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To cite: Park SE, Jeon TJ, Park JY. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2013-202682

Figure 1 Abdominal CT showing a 13.5 cm heterogeneous enhancing mass abutting the body of the stomach with a peritumoural cyst. (A) Axial view (non-enhancing, high density/low density (Hounsfield unit) 30/0), (B) axial view (enhancing, high density/low density (Hounsfield unit) 30/0), (C) coronal view and (D) sagittal view.

Thus, following EUS, differentiation of the cystic lesion from a mucinous cystadenoma or cystadenocarcinoma arising in the retroperitoneum or mesocolon from other SMT was required.

DIFFERENTIAL DIAGNOSIS

- ▶ Gastric SMT
- ▶ Mucinous cystadenoma
- ▶ Mucinous cystadenocarcinoma

TREATMENT

Although the patient did not display symptoms and haematological test results showed no particular abnormal findings,

laparotomy was performed to obtain an accurate diagnosis and to determine the best treatment options, as the lesion was large and radiological examination did not allow the detection of a possible malignancy. The cystic mass was confirmed during surgery to be 8×7×4.5 cm, and it was originated from the mesentery of the transverse colon and attached to the body of the stomach and omentum. A portion of the transverse colon and mesentery including the cystic mass was removed to completely excise the lesion, and wedge resection of the stomach was performed. The surface of the excised cystic mass was dark brown and haemorrhagic, with its internal aspect filled with a haematoma (figure 4). The histological examination of the excised tissues showed that the cystic wall was made up of granulation tissue without an epithelial cell lining, and the cellular contents

Figure 2 Esophagogastroduodenoscopic image showing a huge mucosal elevated mass with an intact mucosa posterior to the greater curvature and mid-to-lower stomach body.

Figure 3 Endosonographic image showing an 8.6×8.8 cm macrocystic, multilobulated, septated cyst with an inner solid component.

Figure 4 A cystic mass (8×7×4.5 cm) is attached to the mesenteric fat tissue. Its cavity is filled with an organising haematoma.

of the granulation tissue were negative for C-kit and CD34, and positive for smooth muscle actin in immunohistochemical stain. Therefore, in the final diagnosis, the cyst was confirmed to be a mesenteric pseudocyst (figure 5).

OUTCOME AND FOLLOW-UP

The patient was discharged on day 12 after the surgery, without any complications, and recurrence of the cyst was not observed on CT performed 3 months after the surgery.

DISCUSSION

Mesenteric cyst is a rare cystic disease that occurs within the abdominal cavity with a prevalence rate of approximately 1/100 000–1/250 000 among adult hospitalised patients.² Mesenteric cysts originate from the mesentery or the surrounding area and have no linkage with retroperitoneal organs, they can occur in any area of the mesentery.¹ According to prior reports, it occurs most frequently in the small bowel mesentery, with an incidence rate of 50–80%, followed by large bowel mesentery with a rate of 15–30%, and retroperitoneal space with a rate of 7–20%. When it occurs in the large bowel, it is more frequent in the right colon.^{2 3} Although mesenteric cysts have been

Figure 5 The cystic wall is haemorrhagic without a lining epithelium. The inner part is filled with a haematoma (H&E staining, original magnification ×10).

Box 1 Classification of mesenteric cysts

- ▶ Lymphatic cysts
 - Simple cyst
 - Lymphangioma
- ▶ Mesothelial cysts
 - Simple cyst
 - Benign mesothelioma
 - Malignant mesothelioma
- ▶ Enteric cysts
 - Enteric duplication cyst
 - Enteric cyst
- ▶ Urogenital cysts
- ▶ Mature cystic teratoma
 - Dermoid cyst
- ▶ Pseudocysts
 - Infectious
 - Traumatic
 - Degenerative

classified in accordance with embryological and causal standards, they are divided into six groups according to the histological features (box 1).^{2 3} Among these, (non-pancreatic) pseudocysts, though not related to pancreatitis, are histologically similar to pancreatic pseudocysts, and the wall of the cyst is composed of fibrous tissue and characterised by the absence of epithelial lining cells. Mesenteric pseudocysts are rare and only few case reports have been noted until now.^{1 6 7} They generally occur secondary to trauma or infection, and are thought to be a haematoma that manifests itself in the mesentery or omentum, or a trace of an abscess that was not completely absorbed.^{7 8} Therefore, the internal aspect of the cyst is frequently filled with haemorrhagic contents or suppurative substances.^{1 7 8} On ultrasonography, the internal aspect is normally hypoechoic and divided by a septum, with the presence of echogenic debris. On CT, fluid–fluid levels can be observed inside the hypodense cyst without postcontrast enhancement.^{1 2 7} In the present patient, although he did not have a history of abdominal surgery or external injury, echogenic material and a septum that appeared to be a solid component of the cyst were detected on EUS, and histological tests showed that the wall of the cyst was composed of granulation tissue without epithelial lining. Therefore, the patient was diagnosed as having a non-pancreatic pseudocyst in accordance with the aforementioned classification.

As most mesenteric cysts have no symptoms, they are frequently discovered by chance on ultrasonography or CT, and it is difficult to detect them on a physical examination or by haematological test.^{1 3 5} Symptoms are mostly related to the size or location of the cyst, and may manifest when accompanied by complications such as infection, bleeding or rupture.^{2 5} A relatively common symptom is abdominal discomfort including pain, distension, palpable mass, nausea, vomiting, constipation and diarrhoea. Intestinal obstruction, torsion, bowel ischaemia and peritonitis may occur occasionally because of the compression of the neighbouring bowel by the huge cysts.^{1–4} Most mesenteric cysts manifest as a single cyst with a diverse range of sizes. However, according to a report, the mean size ranges between 2 and 35 cm.³

Ultrasonography and CT are useful to confirm the location, origin and size of the lesion. Ultrasonography is more sensitive to confirm the presence of septation or debris inside the cyst,

whereas CT is more sensitive for determining the range of the lesion and cystic contents.³ If the location and characteristics of the lesion cannot be assessed accurately with a radiological examination alone, laparoscopy could be considered as one of the diagnostic modalities.^{3,4}

Complete resection of the lesion is the treatment of choice for mesenteric cysts. The surgical procedure differs according to the range of the lesion and extent of intrusion into the surrounding organs.^{2,4} In general, the mesentery around the cyst and affected portion of neighbouring organs are excised along with the cyst.^{2,4} Recently, laparoscopic resection has replaced laparotomy because of its high success rate, in addition, it can reduce surgery time and has a low rate of incidence of post-operative complications.^{2,3} Cystic fluid aspiration is not recommended as a treatment option because it is associated with high recurrence rate and risk of complications, including infection.^{2,3} Most mesenteric cysts are benign diseases, in such cases, there is almost no recurrence with a good prognosis after surgery. However, the follow-up period after the completion of treatment remains to be determined.³

The incidence rate of malignant mesenteric cysts is approximately 3%, most of which is sarcoma with rare cases of adenocarcinoma.^{2,3} Although the characteristic radiological features that suggest malignancy are not known definitively, Tan *et al*³ reported that the features of a bigger size, solid component with the cyst, faster rate of growth are suggestive of malignant change, therefore the patients with these features were monitored more frequently. In addition, a follow-up examination needs to be performed more frequently because the possibility of malignant transformation or the occurrence of complications is higher in large cysts, in those with a solid component, or if the cyst is fast-growing according to the radiological findings prior to surgery.³

Mesenteric cysts need to be distinguished from other masses within the abdominal cavity. Among these, GIST may display diverse pattern of density on CT if accompanied by necrosis within the mass and show a patchy distribution with contrast enhancement.⁹ MCN is generally macrocystic with internal septation and can be accompanied by a solid component under ultrasonography.¹⁰ Although MCN occurs mostly in the ovary, it can occur in a diverse range of extraovarian sites, including the pancreas, appendix, and hepatobiliary tract, as well as in the retroperitoneum or mesentery, although this is rare.¹⁰ Although GIST was suspected in the present patient on CT, typical findings of MCN were observed under EUS and the mass was distinct from the stomach and pancreas. Accordingly, it was thought to be a MCN that occurred in the retroperitoneum or mesentery, which is rare, and surgery was performed because of the large size of the cyst and the presence of a solid component. However, cuboidal or columnar epithelium of the cystic wall, which is observed in MCNs, was not detected according to the results of histopathological tests, and the cyst showed fibrous tissue without epithelial lining. Therefore, it was diagnosed as a pseudocyst.¹⁰

Although mesenteric cysts are rare and not easy to diagnose prior to surgery because of the absence of symptoms in most cases, they must be considered at the time of the differential diagnosis of a cystic lesion within the abdominal cavity. Although most of them are benign, surgical resection needs to be considered because they have a possibility of malignant transformation.

Learning points

- ▶ Although mesenteric cysts are rare and benign in most cases, they must be considered as possible cysts occurring in the abdominal cavity in the differential diagnosis because they are occasionally malignant.
- ▶ If a confirmed diagnosis of a cyst within the abdominal cavity cannot be made based on the radiological examination, surgical resection for the purpose of diagnosis and treatment must be considered even in the absence of symptoms.
- ▶ Although radiological examinations such as ultrasonography or CT are useful for the differential diagnosis of cysts because they can distinguish the features of a cystic mass, histopathological tests must be performed simultaneously to make a definitive diagnosis.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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