Giant mesenteric cyst of mesothelial origin in a haemodialysis patient with previous peritoneal dialysis therapy

Matthias Zeiler1, Stefano Santarelli1, Angela Maria Cangiotti3, Rosa Maria Agostinelli1, Tania Monteburini1, Rita Marinelli1, Emilio Ceraudo2 and Giorgio Cutini2

1Department of Nephrology, Ospedale "Augusto Murri", Jesi, Italy, 2Department of General Surgery, Ospedale "Augusto Murri", Jesi, Italy and 3Electron Microscopy Unit, United Hospitals, Ancona, Italy

Correspondence and offprint requests to: Matthias Zeiler; Email: mrhz1@yahoo.com

Abstract
A 55-year-old female haemodialysis patient presented progressive abdominal liquid formation after having been excluded from peritoneal dialysis therapy because of recurrent peritonitis. Ultrasound was suspicious for ascites secondary to sclerosing peritonitis. Computed tomography revealed a thin-walled mesenteric cyst extending from the epigastric to the pelvic region. The cyst was excised incompletely as extensive adhesions were present. Histology was consistent with a mesothelial cyst of inflammatory origin. Three months after surgery, ultrasound detected a local recurrence at the descending colon. This case emphasizes the relation between mesenteric cyst, persistent inflammatory status and preceding peritoneal dialysis complicated by peritonitis.

Keywords: haemodialysis; mesothelial cyst; peritoneal dialysis; peritonitis

Background
Progressive abdominal distension by intraperitoneal liquid formation in a haemodialysis patient with preceding peritoneal dialysis therapy and antecedent story of ovarian cancer needs accurate radiological and histological workup to exclude the presence of sclerosing peritonitis or recurrence of cancer, and to clarify the manifold differential diagnosis. In this case, ultrasound examination suspected ascites secondary to sclerosing peritonitis, whereas computed tomography revealed a giant mesenteric cyst.

Mesenteric cysts are uncommon abdominal tumours without typical clinical findings, usually detected as an incidental radiological finding or when symptoms are present [1–3]. Here, we discuss the apparently first case of a mesenteric cyst of mesothelial origin in a haemodialysis patient probably due to the persistent inflammatory status and the preceding peritoneal dialysis complicated by peritonitis.

Case report
A 55-year-old female Caucasian patient had been treated at the age of 34 years for ovarian cancer with hysterectomy, salpingo-oophorectomy and local radiotherapy. Seven years later, bilateral hydrenephrosis occurred as a result of the preceding radiotherapy. Computed tomography excluded a recurrence of ovarian cancer at that time. Follow-up ultrasound examinations excluded ascites and cystic formations. At the age of 51 years, renal replacement therapy had to be started. After 42 months on peritoneal dialysis, the Tenckhoff catheter had to be removed as recurrent peritonitis episodes and signs of malnutrition were present. The patient continued further on haemodialysis.

After 4 months on haemodialysis, the patient presented progressive painless abdominal distension and alteration of defecation. Clinical examination revealed signs of a large ascitic fluid collection with shifting dullness and presence of fluid wave on percussion. Liver and spleen were not palpable. Tumour markers as CEA, Ca 125, Ca 19-9 and Ca 15-3 were in the normal range. C-reactive protein and erythrocyte sedimentation rate were elevated, whereas leucocyte count was normal.

Sonography confirmed the presence of a large amount of fluid, extending from epigastrium to pelvis, with some internal echoes and thin incomplete internal septa. All bowel loops, except one, were displaced posteriorly and into the pelvic cavity. The fluid collection was delineated from the intestinal structures by a hyperechogenic 3–6-mm-thick band (Figure 1A). Bowel loop separation or fluid in the cul-de-sac were absent. The ultrasound diagnosis was ascites probably due to sclerosing peritonitis.

Computed tomography revealed an extensive fluid-like expansion with the centre at the mesogastric area delineated by a thin wall. The colon transversum was placed anteriorly and compressed by the liquid formation; all other intestinal structures were clustered posteriorly or in the pelvis (Figure 1C and 1D). Liver, pancreas, spleen and the pelvic cavity were free of neoplastic suspect.

Laparotomy demonstrated a voluminous cyst attached to the inferior side of the liver, the anterior abdominal wall, the colon and the small intestine especially in the pelvic cavity. About 4 litres of a yellowish slightly haemorrhagic liquid were drained. The surgical resection of the cyst was incomplete as the cystic wall attached to the mesentery and small intestine could not be removed without causing harm to these structures. Intestinal resection was not performed because of the extent of the adhesions and the general con-
ditions of the patient, characterized by malnutrition and haemodialysis.

Cytology revealed presence of some mesothelial cells, neutrophils and lymphocytes.

Histopathologic examination of the specimens from different parts of the cyst evidenced a fibrous wall of variable thickness focally infiltrated by lymphocytes and a single layer of flattened cells at the inner surface (Figure 2), consistent with a cyst of mesothelial origin.

Since the tissue was not processed for electron microscopy, two paraffin-embedded specimens were processed for electron microscopy, according to standard techniques. Electron microscopy confirmed the presence of a discontinuous basal membrane (Figure 3A). Neutrophils and macrophages were present in many arterioles and capillaries of the cyst wall (Figure 3B).

The post-operative course was uneventful, and the patient was discharged at the 10th post-operative day. Three months after laparotomy, ultrasound evidenced a complex cystic local recurrence of 6 cm diameter adjacent to the descending colon (Figure 1B). The complex cystic formation remained stable in size during 9 months after surgery. Signs of malnutrition and inflammation diminished during the follow-up period.

Discussion

The case reported here illustrates the potential pitfalls in the diagnosis of a giant mesenteric cyst. The cyst was increasing gradually and occupying the entire abdomen, thus simulating ascites. The history of the patient was biasing the differential diagnosis to ascites due to carcinoma or sclerosing peritonitis.

Ultrasound failed to delineate the cyst due to large size favouring the diagnosis of ascites secondary to sclerosing peritonitis. Computed tomography excluded a late recurrence of ovarian cancer and suggested a cyst of mesenteric origin.

Mesenteric cysts are rare abdominal tumours with an incidence of about 1:105 000 hospitalized adult surgical patients [2]. They can be located anywhere along the gastrointestinal mesentery, most frequently in the small bowel mesentery and mesocolon. Mesenteric cysts located anterior to the intestine are called omental cysts. In adults, they occur with very small incidence, most commonly in women in the reproductive age group. There are several suggested classifications, but the clinically accepted classification is the one based on histopathological features distinguishing between mesenteric cysts of lymphatic, mesothelial, enteric, urogenital, dermoid cystic and pseudo-cystic origin [4,5]. The subgroup mesenteric cyst of mesothelial origin is represented by the simple mesothelial cyst, the benign cystic mesothelioma (peritoneal inclusion cyst) and the malignant cystic mesothelioma. Simple mesothelial cysts are most likely unicellular and congenital. Histologically, infiltration by neutrophils, monocytes or lymphocytes is present only in the case of complication as trauma, rupture, infection or bleeding. Benign cystic mesotheliomas are characterized by multiple thin-walled cysts of few millimetres to several centimetres often with focal inflammatory infiltrates. Clinically, these are frequently associated with inflammatory intestinal diseases, preceding abdominal surgery, endometriosis and neoplasia [6–8]. Malignant cystic mesotheliomas have organ invasive characteristics and signs of mesothelial proliferation.

The formation of an inflammatory pseudocyst is a known complication of peritonitis in peritoneal dialysis [9], whereas there is no report of a mesothelial cyst in dialysis. In this case, the development of the mesothelial cyst seems to be related to the preceding peritoneal dialysis therapy, the frequent peritonitis episodes, the recent surgical removal of the peritoneal dialysis catheter and the persisting inflammatory status. The theory of inflammation is supported by the presence of inflammatory cells in the fi-
brous wall, and by elevated unspecific systemic inflammatory markers. It might be that ongoing peritoneal dialysis is clearing intra-abdominal inflammation continuously, whereas haemodialysis is associated with an aggravation of the inflammatory state due to absent local removal. The decline of the inflammatory state after the incomplete surgical excision and the absence of progression of the complex cystic recidive are indicative of an inflammatory trigger.

The preferred mode of treatment is the complete surgical removal of the cyst [2]. Sometimes, complete enucleation can only be performed by resecting intestinal segments because of firm adhesions of the cyst wall to surrounding mesenteric tissue. After surgical resection of a benign cystic mesothelioma, the risk of recurrence is ~30% to 50%, with treatment-free intervals ranging from 4 months to 12 years [6]. Ultrasound seems to be the modality of choice for follow-up.

The age and sex of the patient, history of peritonitis and abdominal surgery, the histopathological aspect of inflammation, the recurrence and last but not least the complex cystic appearance of the recurrent cyst favour the diagnosis of a benign cystic mesothelioma in contrast to a simple mesothelial cyst.

In conclusion, the presence of a mesenteric cyst should be kept in mind in the differential diagnosis of progressive abdominal distension in a haemodialysis patient, particularly among patients with preceding peritoneal dialysis therapy, if other causes of ascites are ruled out.

Acknowledgements. We are indebted to the nursing staff of the Nephrology Department and the Operating Room for their assistance. We thank Guido Garosi, MD (Siena, Italy) and Giovanni Cancarini, MD (Brescia, Italy) for reviewing and discussing the computed tomography slides. We are grateful to Dr. Maria Cristina Zingaretti, and Michela Cardinali for their excellent technical assistance in preparing the electron microscopy specimens.

Conflict of interest statement. None declared.

References

Acknowledgements. We are indebted to the nursing staff of the Nephrology Department and the Operating Room for their assistance. We thank Guido Garosi, MD (Siena, Italy) and Giovanni Cancarini, MD (Brescia, Italy) for reviewing and discussing the computed tomography slides. We are grateful to Dr. Maria Cristina Zingaretti, and Michela Cardinali for their excellent technical assistance in preparing the electron microscopy specimens.

Conflict of interest statement. None declared.

References

Received for publication: 2.5.09; Accepted in revised form: 18.11.09

Fig. 3. A) Electron microscopy confirming the presence of a discontinuous basal membrane (marked with asterisk) and necrotic superficial cells (presence of vacuoles due to the deparaffination process, magnification ×16 000); B) electron microscopy of a necrotic vessel of the cyst wall containing macrophages (marked with 1) and a fragment of a plasma cell (marked with 2) (magnification ×3400).