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CASE REPORT

Sclerosing peritonitis: an unusual cause of ascites in a patient with systemic lupus erythematosus

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ABSTRACT

Sclerosing peritonitis is a rare condition characterised by fibrosis and adhesion of the peritoneum to loops of the small intestine. It is generally associated with continuous peritoneal dialysis, peritoneo-venous shunts or β-adrenergic blocking agents. In this case we report a female patient with idiopathic sclerosing peritonitis and systemic lupus erythematosus.

KEYWORDS

Fibrosis, idiopathic, paraneoplastic, sclerosing peritonitis

CASE REPORT

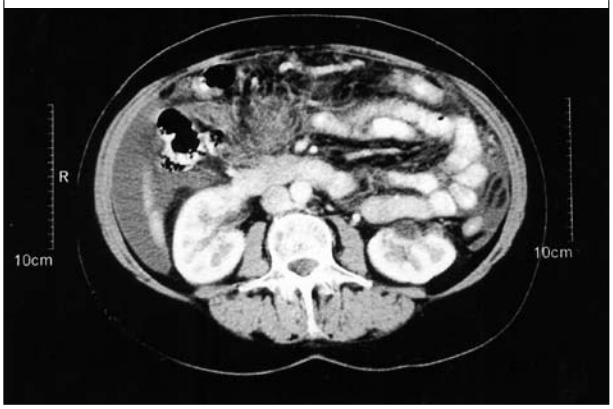
A 62-year-old female patient was admitted to our hospital because of progressive abdominal distension, anorexia and a weight gain of 3 kg in two months. At the moment of presentation she was only taking codeine because of a cough.

Her medical history showed two spontaneous abortions, alopecia areata, and 18 months ago she developed thrombocytopenia (thrombocytes <1 x 10^9/l) with an IgM monoclonal peak of 1.8 g/l. A bone marrow examination at that moment revealed a normal number of megakaryocytes, plasma cells and no evidence of lymphoma. In a 24-hour urine collection no Bence Jones or other proteins were detectable. Since no systemic symptoms were present, autoimmune thrombocytopenic purpura was diagnosed and initially treated with prednisone, which resulted in a recovery of the thrombocytes to normal in seven days. The prednisone was decreased and stopped after two months. Subsequent blood controls were all normal. Her family history was negative. Clinical examination during admission showed a substantial abdominal distension induced by ascites. Rectal and vaginal examination were normal.

Laboratory examinations including haematology were normal (thrombocytes 280 x 10^9/l), biochemistry showed a total protein of 65 g/l (normal: 63-82 g/l), an albumin of 30 g/l (normal: 35-50 g/l). CA-125 was 176 U/ml (normal <35 U/ml), α-fetoprotein was 12 kU/l (normal <5.8). Thyroid stimulating hormone, anti-DNA antibodies, lupus anticoagulants, anticardiolipine antibodies, ENA, p-ANCA, c-ANCA and MPO were all normal. Chest X-ray showed a little infiltration in the middle lobe and a small pleural effusion on the right. This resolved in subsequent controls. Computed tomography (CT) of the abdomen showed a liver cyst, massive ascites, normal internal organs and normal omentum. The fluid of abdominal paracentesis was clear containing limited WBC/mm^3, protein 50.1 g/l and lactate dehydrogenase (LDH) 136 IU/l. Cytological studies were negative for malignant cells, and only showed reactive mesothelium cells. Cultures were negative for bacteria, fungi and tubercle bacilli. A gynaecological echoscopic examination showed atrophic ovaria, but no signs of carcinoma. For the slight lung infiltrate, a bronchoscopy with a broncho-alveolar lavage was carried out, which appeared to be normal for microbiology and pathology. With the suspicion of an autoimmune disorder (not fulfilling the minimal criteria of systemic lupus erythematosus (SLE)) she was treated with prednisone 60 mg/day for six weeks, without a recurrence of the ascites. However, six weeks after stopping the corticosteroids there was a relapse in the ascites and at that moment an abdominal CT scan showed a peritoneal thickening (*figure 1*).

A diagnostic abdominal laparotomy, by a surgical oncologist, revealed an image resembling a peritonitis carcinomatosis with a very stiff omentum. Five litres of ascites were removed

Figure 1. *Abdominal CT scan showing the thickened peritoneal mesothelium*



and multiple biopsies from peritoneum and omentum were taken. Slides of the pathological examination of the thickened peritoneum showed a chronic fibrosing inflammation with a lot of histiocytic multinucleated giant cells, surrounding an arborising proliferation of capillary vessels and fibromyoblasts. The giant cells showed a strong expression of Vimentine, S100, ACT and a low expression of AAT and CD68. There was no expression of AEl/AE3, CEA or EMA in these areas. No carcinomatous or sarcomatous proliferation was present and no foreign body material was seen.

Three months after surgery she presented with a relapse in the ascites and prednisone 60 mg/day was started. The prednisone was gradually decreased to 15 mg/day and azathioprine 100 mg/day was added, which resulted in the ascites resolving. She had been treated with both medicines for six months, but at that moment they had been discontinued because she developed dyspnoea and fever with a suspected immunocompromised infection.

A chest X-ray showed infiltration of the left basal lobe and a small pleural effusion. She was treated with sulphamethoxazole/trimethoprim and doxycyline. A bronchoscopy and broncheo-alveolar lavage was carried out but no micro-organism was identified. After a short improvement, the dyspnoea showed acute progression.

CT angiography of the thorax showed pulmonary embolism. Our patient was treated with acenocoumarol. Echo duplex of the leg veins showed no venous thrombosis. An abdominal ultrasound showed no ascites and normal internal organs. The cause of the pulmonary embolism was unknown at that moment. There was no evidence of malignancy, and examinations for disorders of coagulation were planned after anticoagulation had been stopped. Because of anaemia (Hb 6.1 mmol/l) and arthralgia a laboratory examination was performed, which showed an abnormal titre of anti-ds DNA antibody of 20.5 kU/l (normal <10). ANCA and MPO antibodies were negative.

Ten months later she presented with severe anaemia, dyspnoea and tiredness. Her medication consisted of acenocoumarol. Clinical examination showed basal decreased pulmonary sounds and evidence of ascites. Laboratory examinations showed a haemoglobin of 3.5 mmol/l (normal 7.5-9.9), LDH of 735 U/l (normal <480), bilirubin of 29 µmol/l (normal 3-22) and reticulocytes of 187 ‰ (normal 4-42). Direct and indirect Coombs tests were positive. Her serum showed cold and warm autoagglutinins. Leucocytes and thrombocytes were normal. CT of the thorax and abdomen showed slight pleural effusion and ascites, with normal internal organs. Further tests were performed to exclude an autoimmune disease. ANF was 800 U/ml (normal <50), anti-ds DNA was 4.5 kU/L (normal <10), lupus anticoagulant was positive. MPO and proteinase 3 antibodies were negative. Because she currently had serositis (pleuritis and ascites), haemolytic anaemia and lupus anticoagulant, and the antinuclear antibody titre had been abnormal one year previously, the diagnosis of systemic lupus erythematosus was made in our patient.

Treatment of the autoimmune haemolytic anaemia and SLE consisted of prednisone 100 mg/day which was gradually decreased. The haemoglobin increased from 3.5 to 6.7 mmol/l in four weeks and she had no complaints of dyspnoea or tiredness.

DISCUSSION

Sclerosing peritonitis is a rare disease characterised by fibrosis and adhesion of the peritoneum. It is a myofibroblastic spindle cell proliferation involving the peritoneal surfaces. The peritoneum is thickened, adhesions may be prominent, resulting in an abdominal cocoon. Myofibroblastic spindle cells accompanied by variable amounts of collagen form the fibrous peritoneal membrane.[1] With progression of the fibrosing and sclerosing process, the bowel is ultimately invaded and encased in a 'fibrous cocoon', at which point the term 'sclerosing encapsulating peritonitis' is used.[2,3] This occurs in up to 90% of patients.[3] This situation leads to a significant morbidity due to bowel obstruction and sepsis, with mortality rates up to 80%.[3]

Most reported cases have been secondary to chronic peritoneal dialysis.[2] Fortunately, in this setting it affects less than 1% of the patients.[3] However, some suggest this may be an underestimation of its prevalence due to its insidious nature.[3] In this setting, several factors have been reported to be responsible for this syndrome: the use of acetate buffer or hypertonic glucose, disinfectants such as chlorhexidine and povidine iodide, catheters, in-line bacterial filters, particles of plastics and plasticisers.[4,5]

Patients with peritoneal sclerosis have a higher incidence of infective peritonitis than patients without the condition. A severe episode of peritonitis, particularly pseudomonal or fungal, often precedes the onset of encapsulating peritonitis.[6]

In these cases this disease can be seen as a consequence of an abnormal reaction of the peritoneum to a chronic stimulus. However, peritoneal sclerosis has also been described in nondialysis patients. Best known is the association between the use of β-blockers and sclerosing peritonitis, reported for the first time by Brown in 1974 with the use of practolol. There have also been reports with other β-blockers.[4] Some reports describe this entity secondary to LeVeen peritoneovenous shunts in cirrhotic patients and to ventriculoperitoneal shunts.[2,5-7] Associations with various tumours are also described: with gastric cancer, ovarian thecoma, ovarian teratoma, pancreas carcinoma and renal carcinoma, where the sclerosing peritonitis might be a paraneoplastic phenomenon.[4]

Until now only 17 cases of idiopathic sclerosing peritonitis have been described. Garosi divides this entity into two categories. The first category is associated with other conditions as retroperitoneal fibrosis or pericardial sclerosis which can be a systemic connective tissue impairment. In the second category authors report a genetic predisposition. The early reports on this condition showed a high frequency in young adolescent women in subtropical areas, all with a small bowel obstruction. These were familial forms.[2,4] The authors strongly believe that the genetic predisposition may be the basic trigger for the development of sclerosing peritonitis.[4]

Regarding the cause of the sclerosing peritonitis in our patient, we found no evidence of a paraneoplastic phenomenon after extensive work-up. She had never taken β-blockers and she had no history of infective peritonitis. Odama *et al.* described the co-occurrence of sclerosing peritonitis and SLE in two patients with continuous ambulant peritoneal dialysis. Until now, no reports have been made about nondialysis patients with SLE presenting with sclerosing peritonitis.[3] Our patient presented with recurrent ascites and sclerosing peritonitis. This has not been described before. After a diagnosis of SLE there is usually inflammation of serosal membranes with subsequent peritonitis, pleuritis or pericarditis.[6] Autopsy studies have shown evidence of previous peritoneal inflammation in 63 and 72% of patients with SLE.[7,8] Serositis rarely causes significant ascites.[7] Ascites, a marker of peritoneal irritation, was only detected in 8% of lupus patients in one study and 11% in another,[8,7] which is significantly less than pleural or pericardial effusions. Ascites typically has a gradual onset and occurs after a diagnosis of SLE has been made and it is rarely massive. When patients had massive ascites, SLE was usually diagnosed years earlier; disease activity did not correlate with the course of ascites.[9,10] Some degree of ascites is usually associated with nephrotic syndrome, protein-losing enteropathy, constrictive pericarditis, congestive heart failure, or Budd-Chiari syndrome.[11] Cirrhosis, pancreatitis, peritoneal carcinomatosis and tuberculous peritonitis should also be excluded. Marked ascites has been attributed to chronic lupus peritonitis.[12-17] This is characterised by the insidious onset of massive, painless ascites. When pain is present it is attributed to massive distention.

Our patient presented with three recurrences of ascites, which responded initially to immunosuppressive therapy. At the time of the first recurrence peritoneal biopsies already showed chronic fibrosing inflammation. A chronic serositis as a symptom of SLE may have finally led to the sclerosing peritonitis. What is remarkable is the insidious onset of her symptoms, which resulted in a delay in the diagnosis and therapy. Also, no other apparent symptoms of SLE were present until the second recurrence, and the criteria of SLE were only fulfilled at the third recurrence of ascites.

The presentation is relatively uniform regardless of the cause. The clinical manifestations have an insidious onset with episodes of abdominal pain. Later patients develop nausea, vomiting associated with weight loss and ascites. Sometimes the presentation is acute with a painful abdominal mass, and bowel obstruction.[4,9] Peritoneal dialysis patients also experience ultrafiltration failure.[8] Because the early clinical features are nonspecific, patients are often not recognised until they develop complications. The most common complications appear to be small bowel obstruction, bowel necrosis, and enterocutaneous fistulae, all of which necessitate surgical intervention.[10] Regarding the diagnosis our patient underwent laparoscopic biopsies. There is no reliable noninvasive method for screening for sclerosing peritonitis. Since mesothelial cell injury and loss precede the development of fibrosis, some suggest the routine assessment of markers of mesothelial cell mass in peritoneal effluent, such as CA125. A sudden and persistent decrease in the level of CA125 in the peritoneal effluent has been associated with the presence of sclerosing peritonitis.[3] The provisional diagnosis of sclerosing peritonitis can be made by CT, which provides information about the ascites, calcifications and thickening of the peritoneum.[4,11-18] The diagnosis is confirmed by surgical exploration and histological examination of peritoneal biopsy.[4] The macroscopic aspect of the peritoneum is grossly altered: the surface is reduced to a rough thickened membrane. The microscopic picture is dominated by sclerosis. In many cases there is a cellular infiltrate in the sclerotic tissue, which can contain leucocytes, erythrocytes, macrophages and giant cells.[12-19] Calcifications and severe vascular alterations also occur.[13-19] An increase in mesothelial cell surface area and the emergence of giant cells in the effluent indicate advanced histopathology, and may be useful indicators to prevent the development of sclerosing encapsulating peritonitis.[14-20]

The overall prognosis is poor after a sclerosing encapsulating peritonitis has developed, because it often results in death from complications due to bowel obstruction and sepsis.[3] The reported death rate of encapsulated sclerosing peritonitis is more than 60% within four months of diagnosis.

Surgery is needed in cases of intestinal obstruction.[4] This is often complicated because of severe adhesion of the peritoneum.[15-21] No surgical treatment is required in ascites, asymptomatic sclerosing encapsulating peritonitis or subacute intestinal obstruction.[16-22] In our patient the small bowel was not incised because there was no evidence of small bowel obstruction. In cases associated with peritoneal dialysis removal of the catheter is needed and often results in improvement of the symptoms and regression of the anatomic lesions.

Many case reports describe the singular or combined use of steroids and immunosuppressants. Most of them report success with at least a longer survival. Junor described this for the first time in 1993, his patients treated with prednisone 30 to 50 mg/day, in some cases supplemented with 100 to 125 mg/day azathioprine, outlived the patients not treated with immunosuppressants.[17-23] But these results remain difficult to interpret because the efficacy of the treatment depends of the stage in which the therapy is started.[18-24] Peritoneal sclerosis usually develops with fever, increased levels of C-reactive protein, slight ileus symptoms and ascites. Precise identification of this 'inflammatory stage' should guide initiation of steroid administration.[19-25] Other authors suggest that since some patients have signs of a chronic infection, the use of antibiotic therapy should be examined. This has now been studied in Italy by the Peritoneal Dialysis Study Group.[4]

Tamoxifen has been successfully used in the treatment of retroperitoneal fibrosis. A case-control study of 23 peritoneal dialysis patients with peritoneal sclerosis treated with tamoxifen 40 mg/day for a mean of 14 months resulted in prevention of encapsulating peritoneal sclerosis and a significantly lower mortality (22 *vs* 71%) in the treated patients.[19-26] In another study subsequent CT of a patient treated with tamoxifen showed significant reduction in the thickness of the peritoneum, perhaps induced by angiogenesis inhibition.[20-27]

No earlier reports have been made about a patient with SLE who initially presented with a sclerosing peritonitis. The high mortality rate of sclerosing encapsulating peritonitis has emphasised the need to develop preventive strategies. It is clear that this rare and serious disease needs further research regarding the aetiology and possible therapies. When this entity is diagnosed primary mechanisms must be excluded.

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