Case Report

Opaque enema CT scan allows early diagnosis of non-occlusive right colonic ischaemia in dialysis patients

A. Berger¹, M.-F. Mamzer-Bruneel², P. Wind¹, C. A. Cuenod³, C. Buisson⁴ and P.-H. Cugnenc¹

¹Service de Chirurgie Digestive, ²Service de Radiologie, Hôpital Laennec, ³Service de Transplantation et Réanimation, Hôpital Necker, ⁴Centre de Dialyse de l’Aura, Paris, France

Introduction

Gastrointestinal ischaemia is frequent in chronic haemodialysis patients, and causes high morbidity and mortality. Ischaemia affects the small bowel and/or the colon, is usually non-occlusive [1] and has to be treated surgically only in its gangrenous form, which constitutes 20% of cases [2]. Postoperative mortality reaches 60–80%. This rate can be reduced when patients undergo surgery within 24 h of diagnosis, as shown in a recent series [3]. The main problem is that diagnosis is really difficult, and is made intraoperatively in about 50% of cases. We report here our experience of four cases of colonic ischaemia with exclusive right colon involvement, successfully operated in an emergency setting, after an abdominal opaque enema CT scan which confirmed the clinically suspected diagnosis.

Case reports

Case 1

Mrs GAU. . ., aged 66, on haemodialysis for the past 6 years for renal failure due to a reflux renal disease, was hospitalized for a pain in the right hypochondrium, which started 5 h after a haemodialysis session. Clinically, tenderness of the right hypochondrium was noted, with a temperature of 38 °C; biologically, 15 100/mm³ leukocytosis was found, without hyperka-le mia. In this appendectomized and cholecystectomized patient, colonic ischaemia was clinically suspected. An opaque enema CT scan disclosed a markedly thickened right colon wall with parietal pneumatosis indicative of perforation (Figure 1). Necrotizing colonic ischae-mia was confirmed by laparotomy, and right colec-tomy with ileotransverse anastomosis was performed. The postoperative period was marked by a peritoneal haemorrhage on the 7th day after a haemodialysis session. This haemorrhage required further surgery, which was followed by pneumococcal peritonitis with a positive outcome.

Case 2

Mrs MAN. . ., aged 68, on haemodialysis for 7 years, nephrectomized 2 years earlier, was hospitalized for an abdominal periumbilical pain that started 6 h after haemodialysis and migrated secondarily to the right lower quadrant. On physical examination, tenderness of the right lower quadrant was noted together with a 38.6 °C temperature and constipation. Biologically, 12 400/mm³ leukocytosis was noted as well as hyperka-le mia. An opaque enema CT scan showed irregular thickening of the right colon wall with parietal pneu-matosis and infiltration of the surrounding fat. Laparotomy disclosed ischaemic necrosis of the caecum for which right colectomy was performed with tempo-rary ileostomy and colostomy. The postoperative course was uneventful. Continuity was restored 4 months later with no complications.

Case 3

Mrs CHO. . ., aged 40, was hospitalized in an emergency 4 h after a haemodialysis session, with abdominal pain in the right lower quadrant, and a temperature of 39 °C. She had been on haemodialysis for 3 years for lupus after an unsuccessful renal transplantation. On physical examination, tenderness of the right lower quadrant was noted. Kalaemia and white blood cell count were normal. Right colonic ischaemia was sus-pected, and a CT scan was performed. The results of the scan were initially considered as normal. Later, however, a second oriented reading of the images showed thickening of the caecal cul-de-sac with densification of the surrounding fatty tissue, but pari-etal pneumatosis. Exploratory laparotomy revealed acute ischaemia of the caecum, with no evidence of necrosis. Right colectomy was performed with immediate ileotransverse anastomosis. The postoperative course was uneventful.

Correspondence and offprint requests to: M.-F. Mamzer Bruneel, Service de Transplantation et Réanimation, Hôpital Necker, 161 Rue de Sèvres, 75743 Paris Cedex 15, France.

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Case 4

Mrs COR..., aged 63, was for 8 years on haemodialysis for renal failure secondary to polycystic renal disease. She had a history of appendectomy, left nephrectomy, and sigmoidectomy for complicated diverticulitis 7 years earlier. Four hours after a haemodialysis session, she complained of right lower quadrant abdominal pain and her temperature was 39.9°C. Tenderness of the right lower quadrant was noted as well as hyperleukocytosis and hyperkalaemia. The clinical findings suggested right colonic ischaemia, and an opaque enema CT scan disclosed localized thickening of the caecum wall with parietal pneumatosis (Figure 2). Intraoperatively, a preperforating necrotic lesion was visible on the caecum. The superior mesenteric, ileocaeco-appendicular and right superior colic vascular pedicles were pulsating. Ileo-caecal resection was performed with temporary ileostomy and colostomy. The postoperative course was uneventful. Continuity was restored 4 months later with no complications.

Discussion

Diagnosis of non-occlusive mesenteric ischaemia is difficult [4] and should be considered first for any abdominal pain in chronic haemodialysis patients after a dialysis session. In all cases the scarcity of clinical signs contrasts with the severity of the observed lesions. In the series reported in the literature, the diagnosis was made intraoperatively in 50% of cases, because physical examination, laboratory tests and imaging procedures were not specific. Pain is the only constant symptom, usually starting 8 to 12 h after the last dialysis session. Clinical examination contributes little, since it only induces rebound tenderness of the right lower quadrant or the right hypochondrium. Three biological abnormalities are common but non-specific: hyperleukocytosis, metabolic acidosis and hyperkalaemia. Plain abdominal X-rays are not specific, and sometimes show localized colonic dilatation [5]. In the past, colon enema was the diagnostic method of choice. Colonic ischaemia is manifested by ‘thumbprinting’, which reflects submucosal oedema and haemorrhage. Selective mesenteric arteriography is not contributive since the mesenteric vessels usually remain intact. Emergency endoscopy is limited to the rectosigmoid. Moreover, the mucosal findings unfortunately do not establish the transmural changes and therefore endoscopy can confirm the diagnosis but not the severity of disease. Postoperative mortality varies from 60 to 80% [1] with a high recurrence risk in the following months. These high mortality rates are associated with patients’ history, recurrence frequency and the oft-noted delayed diagnosis, and a recent series showed a 15% mortality rate when patients were operated within 24 h [3].

In our series, abdominal CT scan coupled with a water-soluble enema has proved a reliable test allowing early diagnosis, there was no postoperative mortality.
and none of our four patients relapsed after an average of 8.5 months (range 5–12). Opaque enema CT scan correctly defined the involved colonic segment. In all cases the bowel wall appeared thickened. This thickening was localized or circumferential and continuous, with fatty tissue infiltration around the involved colon. When these features were associated with parietal pneumatosis, they correlated with the surgical and histological findings of necrosis. In one patient, a localized thickening was visualized without parietal pneumatosis that corresponded histologically to ischaemia without necrosis. Visualization of parietal pneumatosis might therefore be an X-ray sign allowing acute non-necrotic colonic ischaemia to be distinguished from the necrotic form.

**Conclusion**

Patients with chronic renal failure were isolated as a sub-group at risk for gastrointestinal ischaemia, which usually affects the right colon and/or the small bowel and is non-occlusive. Diagnosis is always difficult and surgical treatment, only required in necrotic forms, has to be performed early. Early diagnosis of non-occlusive mesenteric infarction in haemodialysis patients requires a high degree of suspicion with regard to any patient complaining of abdominal pain after a haemodialysis session. The abdominal CT scan coupled with a water-soluble enema seems to be a reliable test allowing firstly early diagnosis, and secondly acute non-necrotic colonic ischaemia to be distinguished from the necrotic form.

**References**


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