Acute colon diverticulitis in multiple myeloma patient: an unusual presentation of a colonic perforation. Case Report

Ann. Ital. Chir., LXXIII, 6, 2002

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Abstract

This case report describes an acute colonic diverticular perforation occured to a multiple myeloma patient, taking corticosteroid and morphine therapy, revealed by a subcutaneous ephysema of upper chest and right abdomen as initial presentation.
Sigmoid diverticulitis with perforation and generalized peritonitis is a severe complication of the diverticular disease and it is due to diverticular microperforation. This condition occurs more frequently in patients with widespread diverticolosis and usually after 50 years of age, and the frequency of related complications increases with age (and with the use of corticosteroids).
Extraperitoneal air from the sigmoid-rectum perforation can escape diffusing superiorly though paravertebral retroperitoneal tissues and via the diaphragmatic iatus into the mediastinum, producing pneumomediastinum and it diffuses to yield superior thoracic emphysema.
This report suggests that the diagnosis of retroperitoneal perforation is usually difficult because of the lack of signs of peritoneal irritation and the paucity of symtoms, particularly in patients treated with corticosteroids.
Key words: Multiple myeloma, corticosteroid, diverticulitis, diverticular perforation, retropneumoperitoneum, pneumomediastinum, Hartmann's procedure.

Riassunto

DIVERTICOLITE ACUTA IN PAZIENTE AFFETTO DA MIELOMA MULTIPLO: UN'INUSUALE PRESENTAZIONE DI PERFORAZIONE DIVERTICOLARE COLICA

Gli autori riportano un caso di perforazione di diverticolo del sigma-retto verificatosi in un paziente affetto da mieloma multiplo in terapia con corticosteroidi; il quadro clinico si è manifestato inizialmente con algie adominali associate ad enfisema sottocutaneo della regione toracica.
La perforazione di un diverticolo del colon con associata peritonite generalizzata è una severa complicanza della malattia diverticolare che si verifica più frequentemente in pazienti con diverticolosi del colon di età superiore a 50 anni; l'incidenza aumenta con l'età e la terapia con corticosteroidi.
Il pneumoretroperitoneo prodotto da una perforazione di un

Introduction

The use of corticosteroids may be associated to different and at times grave complications involving the gastrointestinal tract (1, 2). Acute colonic diverticular perforation has to be considered as a possible event in patients taking steroid therapy either as long term and low dose therapy or short high courses (3). An overwhelming problem is the frequent paucity of clinical signs or unusual presentation of bowel perforation among these patients.
A case of subcutaneous emphysema of upper chest and right abdomen was the initial presentation of bowel perforation in a patient treated with corticosteroids.

Case Report

A 63 year-old man with known Ig G/k multiple myeloma (M.M.) was admitted to the Department of Haematology because of a recent increase in serum paraprotein concentration and diffuse bone pain associated to low back pain and right sciatica.
Fifteen days before the patient had undergone neurosurgery for laminectomy in order to remove a protrusion of a lumbar intervertebral disk between fourth and fifth lumbar vertebrae detected by computed tomography scans (the lumbar disk syndrome began two and a half

Pervenuto in Redazione il 14 Marzo 2002
Aggiornato il 5 Aprile 2002

diverticolo del sigma-retto porta ad una diffusione dell' aria superiormente attraverso i tessuti paravertebrali retroperitoneali e tramite lo iatus diaframmatico nel mediastino, producendo un pneumomediastino ed infine un enfisema toracico sottocutaneo.
Questo caso suggerisce come la diagnosi di peforazione retroperitoneale possa risultare difficoltosa per la ridotta presenza di sintomi e di segni di irritazione peritoneale in pazienti in trattamento con corticosteroidi.
Key words: Mieloma multiplo, corticosteroidi, diverticolite, perforazione diverticolare, retropneumoperitoneo, pneumomediastino, intervento sec. Hartmann.

mouth before and no hystopathological analysis was made).
Physical examination revealed normal vital signs and temperature, lung auscultation did not reveal any pathological sound and the abdomen was soft and distended with mild epigastrical tenderness without guarding or signs of peritonitis. On neurological examination no stretch reflexes were evocated and Lasegue's sign was positive at right lower limb.
The assessment of a complete blood cell count was: white blood cells 7900/mL with 72% neutrophils, 12% lymphocytes, 10% monocytes and 6% eosinophils, haemoglobin 12,1 g/dL and platelets 216000/mL. Routine laboratory tests were within normal range except for high levels of acute phase reactants (erithrocyte sedimentation rate was 71 mm/h, fibrinogen was 530 mg/dL, ferritin was 466 ng/mL, C-reactive protein was 1,30 mg/dL, LDH was 508 U/L) and an increase of paraprotein serum levels. There were no new bone lesions since the last x-rays.
Pertinent past medical history included the diagnosis of multiple myeloma made five months before admission, followed by chemoterapic regiment with VAD (vincristine 1 mg/m^2, doxorubicin 50 mg/m^2, dexamethasone 20 mg/m^2 for 4 days) repeated once a month for four times (4), and a history of rectal bleeding due to the presence of an adenomatous polyp in the right colon revealed by a colonoscopy.
During his stay a new evaluation was made by CT scan demonstrating the presence of solid ipodence material of vertebral specum pressing cauda equina between L4 and L5, and for the increasing sciatalgya was administered dexamethasone 8 mg x 2 i.v. daily and analgesics (non-steroidal anti-inflammatory agents in the beginning and morphine 10 mg x 2 daily later). In the meantime an MRN examination was asked in order to get a better analysis.
In few days general clinical condition worsened because of relative resistance to the antalgic therapy, associated to an objective swelling of right lower limb and a progressive increase of peripheral blood neutrophil count as unique laboratory abnormal finding (white blood cells were 33000/mL with 97% of neutrophil). In a while the patient became dyspnoic, tachicardic and astenic with normal body temperature, and on physical examination was observed the appearance of an upper chest and right abdomen subcutaneous emphysema. Chest and abdominal x-rays and CT scans (without contrast), were performed revealing right pleural effusion, pneumomediastinum, subcutaneous thoracic and abdominal emphysema, retropneumoperitoneum and pneumatosis coli without signs of occlusion and free abdominal effusion. The fibreoptic bronchoscopy didn't show any evidence of pulmonary disruption and the radiograph with barium meal of digestive apparatus excluded any perforation in this site.
Because of a further worsening of clinical picture, characterized by diffuse abdominal tenderness and rebound in a distended abdomen, an urgent exploratory laparotomy was accomplished. In this circumstance Hartmann operation (5) with primary resection of sigmoid-rectum colon was made as procedure of choice and well known to remove at first diseased bowel avoiding the risk of primary anastomosis (6, 7, 8).
Hystopathologial examination of the resected colon displayed a diverticular perforation as the actual site of origin of retro-peritoneal air in absence of extramedullary myelomatous tissue.
Post operative phases were dramatically characterized by a multi-organ failure related to sepsis, that was resistant to the therapeutic approaches performed in the intensive care unit, leading the patient to death in few days.

Conclusions

Pnemo-retro-peritoneum and pneumomediastinum may result from perforation of gastrointestinal tract, bronchopulmonary distruption and gas-forming infections (9).
A diverticular perforation in the posterior wall of the sigmoid-rectum colon occurred in this patient.
Sigmoid-rectum diverticulitis with perforation and generalized peritonitis is a severe complication of the diverticular disease (10, 11) and it is due to diverticular microperforation with bacterial invasion of mesenteric fatty tissue (12). This condition occurs more frequently in patients with widespread diverticolosis and usually after 50 years of age, and the frequency of related complications increases with age and with the use of corticosteroids (13).
The way followed by the air to get to the retroperitoneal space is passing from diverticular sigmoid-rectum perforation through the lesser resistance of this tissues, then pressure gradient between bowel lumen and retroperitoneum can push intestinal contents and gas into retroperitoneal space. Finally extraperitoneal air from the sigmoid-rectum perforation can escape diffusing superiorly though paravertebral retroperitoneal tissues and via the diaphragmatic iatus into the mediastinum, producing pneumomediastinum and afterwards through either Grodinsky's space (bounded by the skull, diaphragm, and anterior and posterior cervical fascia) or the retropharyngeal space it diffuses to yield superior thoracic emphysema.
The diagnosis of retroperitoneal perforation is usually

difficult because of the lack of signs of peritoneal irritation and the paucity of symtoms particularly in patients treated with corticosteroids and morphine. Eventually corticosteroid therapy, already known for gastric lesivity (14), may be associated with severe complications involving even large intestine (3). Glucocorticoids can produce ulceration and perforation of colonic diverticula and peritoneal infection either interfering with normal mechanisms of bowel repair or by direct injury.

As a matter of fact diverticular perforation may be facilitated from the inhibition of the synthesis of prostaglandins, that loose their beneficial property of cytoprotection, and from the immunosuppressive action of glucocorticoids that can favour the diffusion of peritoneal infection (3). Furthermore, it has to be considered the possible role of glucocorticoids in masking leukocytosis, a laboratory sign of bacterial infection, instead of an effective shift of neutrophil distribution (15).

It is moreover necessary to consider the role of morphine with regard to this case. Morphine increases wall tone and number of contractile events in the colon: however these are repetitive, rhythmic and non-propagating contractions that are particularly stimulated (16).

The feature of these events being non-propulsive may lead to slow down the movements of contents and so to increase the pressure in some segments of colon, eventually inducing diverticular perforation.

Although morphine increases basal tone in colon, it doesn't increase its activity to relax ahead of peristaltic contractions.

Acute diverticulitis in the immunocompromised patient is a complicated clinical matter for his greater risk of free perforation and need for surgery than in the non-immunocompromised patient (17). In particular neoplastic patients, either for the severe clinical condition or for chemotherapy, should be considered at risk. Concerning M.M., a large study involving 341 treated patients showed that perforation and peritonitis rarely (less than 1%) occur as direct complication of the chemotherapy regiment (18) Further, rarely M.M. may present with an isolated colon localization such as polipoyd mass or constricting lesions (19) and it is more frequent as a consequence of a spread diffusion of malignant plasmacells, typical of the terminal phase of the disease.

In this case, although the patient was in progression, the presence of sigmoid localization was excluded by hystopathological analysis.

Curiously until now only a case has been reported with similar features and dealing with the association between M.M. and colonic perforation: even in this circumstance steroid therapy had been accomplished with an unclear clinical situation and an uncertain diagnosis (20, 21).

Thus, despite the low prevalence of colon involvement or colon perforation in M.M. patients, anytime a steroid therapy is introduced (as ever it happens) for M.M. treatment we should pay attention. Patients presenting with unclear abdominal discomfort, unexplained fever and leukocytosis have to be carefully monitored and studied in the attempt to exclude this rare and terrible complication (22).

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