Toxic megacolon in ulcerative rectocolitis. Current trends in clinical evaluation, diagnosis and treatment

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Toxic megacolon in ulcerative rectocolitis. Current trends in clinical evaluation, diagnosis, and treatment

Toxic megacolon is a clinical condition associated to high risk of colonic perforation, that significantly increases – even triplicates – the megacolon-related mortality when causing diffuse peritonitis. Abdominal and pelvic helical CT scan proved to be a fundamental diagnostic tool, in defining the colic dilatation and perforation.

Conservative treatment is initially indicated in the event of toxic megacolon arising at the onset of a severe or toxic colitis. However it should be avoided when the toxic megacolon appears on corticosteroid therapy. Non operative management must not exceed 48 hours. The rationale of this strategy lies on the fact that early surgery is burdened by a mortality rate that, although moderate, is still higher than medical treatment. Nevertheless, successful conservative management does not exempt from surgery, which must be performed as soon as possible, in an elective setting, to prevent the recurrence of toxic megacolon.

In emergency total colectomy and end ileostomy is the gold standard procedure. Bowel continuity will be restored, evaluating case by case, by performing an ileorectal anastomosis or proctectomy and ileoanal pouch anastomosis. Primary ileorectal anastomosis should be reserved to selected cases.

In the elective setting, after proper therapy and regression of toxic megacolon, proctocolectomy and ileoanal pouch anastomosis is indicated.

KEY WORDS: Surgery, Toxic megacolon, Treatment, Ulcerative colitis

Introduction

Toxic megacolon is a life-threatening complication of the acute severe or hyperacute-toxic ulcerative rectocolitis. It is characterized by segmental or whole colon distention.

Colon diameter, in transverse tract, exceeds the measure of 6 cm, with disappearance of the haustra and peristalsis.

In this work we report our experience with the intent of highlighting the clinical signs to consider in monitoring the evolution of the disease, the available diagnostic methods and the surgical strategies to perform.

Materials and Methods

From January 1985 to December 2006, 1182 patients with diagnosis of ulcerative rectocolitis were observed (Tab. I); 192 cases with severe or toxic or complicated...
ulcerative rectocolitis required hospitalization and intensive treatment; 63 patients (32.8%) underwent urgent or emergency surgery; 6 (3.1%) were submitted to delayed elective surgical treatment; in 123 (64.1%) patients, a conservative management was successfully performed, as they responded positively to intensive care and drug therapy (Tab. II).

The diagnosis in the 123 non-operatively treated cases was severe colitis (N=95; 77.2%), hemorrhagic colitis (N=16; 13%), and toxic colitis (N=12; 9.8%). The 63 patients who underwent urgent or emergency surgery (Tab. III), were affected by severe or toxic colitis (N=36; 57.1%), toxic megacolon (N=12; 19.1%), bowel perforation (N=8; 12.7%) and severe haemorrhage (N=7; 11.1%). The 6 patients treated in elective surgery were affected by toxic megacolon (Tab. I).

Thus toxic megacolon was diagnosed in 18 patients (10 males, 8 females), mean age 48.6 (range: 28-72 years).

Results

In the patients who underwent emergency surgery (Tab. III), a colectomy with rectal stump sinking and ileostomy was performed in 59/63 (95.6%); emergency proctocolectomy and ileostomy was carried out in 4/63 (6.4%) who manifested a severe haemorrhage of the rectum.

All the patients affected by toxic megacolon underwent total colectomy, with intraperitoneal rectal stump sinking and ileostomy. Twelve were operated in urgency; 6 underwent elective delayed surgery. In the latter the toxic megacolon appeared at the onset of the severe acute or toxic ulcerative colitis; intensive care and proper pharmacological treatment allowed emergency procedure to be avoided. These patients were submitted to an elective proctocolectomy, in order to prevent the high risk of recurrence of the megacolon.

In the emergency surgery group (Tab. IV), the morbidity observed (42.85%) was due to: laparotomic wound infection (N=8; 12.7%), pulmonary disease (N=6; 9.5%), cystitis (N=5; 7.9%), central venous catheter infection (N=4; 6.3%), infusion phlebitis (N=4; 6.3%). The mortality (6/63; 9.5%) referred to MOFS (Tab. V) following severe colitis (N=1), toxic megacolon (N=2) and bowel perforation (N=3).

In the group of patients operated for toxic megacolon, complications were observed only among the emergency procedures (7/12; 58.3%): surgical wound infection (N=3; 25%), bronchopneumonia (N=2; 16.66%), cystitis (N=1; 8.33%) and central venous catheter infection (N=1; 8.33%). Two patients – both belonging to the emergency surgery group – died of sepsis and MOFS.

Discussion

Toxic megacolon may arise at the beginning of severe acute or toxic ulcerative colitis, or, in most cases, during the worsening of its course.

Laboratory and radiographic monitoring of severe and toxic ulcerative rectocolitis plays a fundamental role for the clinician, to detect the early premonitory signs of toxic megacolon.

In regards to the clinical parameters, the surgeon rarely observes the onset of symptoms of patients affected by ulcerative rectocolitis. They are frequently evaluated on pharmacological – particularly corticosteroids – therapy,


<table>
<thead>
<tr>
<th>Patients</th>
<th>N.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed</td>
<td>1182</td>
<td></td>
</tr>
<tr>
<td>Hospitalized</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(severe or toxic or complicated ulcerative colitis)</td>
<td>192</td>
<td>32.8</td>
</tr>
<tr>
<td>urgent or emergency surgery</td>
<td>63</td>
<td>32.8</td>
</tr>
<tr>
<td>elective surgery (improved toxic megacolon)</td>
<td>6</td>
<td>3.1</td>
</tr>
<tr>
<td>non-operative treatment</td>
<td>123</td>
<td>64.1</td>
</tr>
</tbody>
</table>

Table II - Non-operative treatment.

<table>
<thead>
<tr>
<th>Complication</th>
<th>N. of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe colitis</td>
<td>95 (77.2%)</td>
</tr>
<tr>
<td>Severe haemorrhage</td>
<td>16 (13.0%)</td>
</tr>
<tr>
<td>Toxic colitis</td>
<td>12 (9.8%)</td>
</tr>
<tr>
<td>Total</td>
<td>123 (100.0%)</td>
</tr>
</tbody>
</table>

Table III - Urgent or emergency surgery.

<table>
<thead>
<tr>
<th>Indication to surgery</th>
<th>N. of Patients</th>
<th>Surgical procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe or toxic colitis</td>
<td>36 (57.1%)</td>
<td>Colectomy, rectal stump sinking, ileostomy</td>
</tr>
<tr>
<td>Toxic megacolon</td>
<td>12 (19.1%)</td>
<td>Colectomy, rectal stump sinking, ileostomy</td>
</tr>
<tr>
<td>Perforation</td>
<td>8 (12.7%)</td>
<td>Colectomy, rectal stump sinking, ileostomy</td>
</tr>
<tr>
<td>Severe haemorrhage</td>
<td>7 (11.1%)</td>
<td>Colectomy, rectal stump sinking, ileostomy</td>
</tr>
<tr>
<td>Total</td>
<td>63 (100.0%)</td>
<td>59 Colectomy, rectal stump sinking, ileostomy</td>
</tr>
</tbody>
</table>

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surgical wound infection
Bronchopneumonia
Cystitis
Central venous catheter infection
Infusion phlebitis
Total

<table>
<thead>
<tr>
<th>Clinical feature</th>
<th>N. of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxic colitis</td>
<td>1/63 (1.6%)</td>
</tr>
<tr>
<td>Toxic megacolon</td>
<td>2/63 (3.1%)</td>
</tr>
<tr>
<td>Perforation</td>
<td>3/63 (4.8%)</td>
</tr>
<tr>
<td>Total</td>
<td>6/63 (9.5%)</td>
</tr>
</tbody>
</table>

prescribed by a physician or a gastroenterologist. Corticosteroid therapy may unfortunately hide the clinical evidence, interfering with fever and abdominal reactivity. Hence, in patients with severe ulcerative rectocolitis, abdominal pain must be carefully considered; the abdominal examination has to be accurate, above all the auscultation, where we may find decreased bowel peristalsis sounds, often distanced one from another by long silent intervals.

An important clinical sign is the consistency of stools. This expresses the amount of water reabsorbed by the colic mucosa, and consequently the magnitude of the disease.

The most significant hematochemical parameters to monitor in severe acute or toxic ulcerative rectocolitis are: haemochrome (WBC, Hb, HTC), haemogasanalysis, to evaluate metabolic alkalosis, albuminemy, serum electrolytes (kaliemy, particularly), erythrocyte sedimentation rate and C-reactive protein (CRP), showing the extension of the inflammatory process. Indeed, CRP value is low in case of proctitis or proctosigmoiditis, whereas it increases over 2.8 mg/l in the presence of left colitis or ic megacolon.

A plain abdominal X-Rays is an important diagnostic tool in severe ulcerative rectocolitis. It allows the evaluation of bowel dilatation degree, intraluminal content, intestinal wall thickness, presence of ulcers and their deepening – predictive sign of perforation – by performing repeated and close controls, as well as the presence of islands of normal mucosa.

Abdominal and pelvis CT scan – especially spiral CT – proved to be the most effective imaging tool, even without contrast agents, in defining the colic dilatation and perforation, as well as the involvement of each colic wall layer in the inflammatory process.

Several clinical predictive indices have been tested for the monitoring of clinical course, intended to set proper timing of medical treatment and indication to surgery.

We adopted the surveillance protocol proposed by Kumar to perform an accurate monitoring of the patients affected by ulcerative rectocolitis. This is aimed at providing an early diagnosis of complications, including toxic megacolon.

The protocol implies:

- physical examination twice a day, performed by the surgical staff;
- monitoring cardiac frequency and body temperature; number of defecations and characteristics of the stools (consistency, presence of blood);
- abdominal pain and tenderness, characteristics of peristalsis;
- haemoglobin and electrolytes dosage once a day, erythrocyte sedimentation rate and C-reactive protein dosage in alternate days;
- plain abdomen X-Rays daily.

In presence of toxic megacolon, when appearing at the onset of an acute severe or toxic colitis, it is preferable
to not opt for immediate surgery; intensive care and drug therapy will be performed for no longer than 48 hours\textsuperscript{18}.

Indeed early surgery, though burdened by low mortality rate, is related to higher mortality with respect to conservative management\textsuperscript{19}, and longer duration of medical therapy before urgent colectomy correlates to major surgical complications\textsuperscript{20}.

When the pharmacological therapy is effective, the patient in any case has to undergo elective surgery as soon as possible, to prevent the high risk of a further short term oncoming attack of complicated ulcerative colitis\textsuperscript{1}.

Emergency surgery is mandatory when the patient with toxic megacolon appears to have had corticosteroid therapy. Indeed, in this case prolonged medical treatment is associated with a high mortality rate\textsuperscript{21}. The administration of high doses of corticosteroids may conceal abdominal signs and symptoms related to perforation. For this reason it must be investigated by performing daily plain X-rays of the abdomen.

Finally, more than half of the patients affected by severe ulcerative rectocolitis, complicated by massive hemorrhage, develop a toxic megacolon\textsuperscript{22}. Therefore, the coexistence of both complications must always be suspected.

The surgical option concerning the toxic megacolon is well stated at present\textsuperscript{18,23-30}.

In emergency, it is advisable to avoid complex and demolitive surgical procedures requiring a long operation time. The resection of the colon – responsible for toxico and septic conditions – is mandatory\textsuperscript{31}. The surgical gold standard is total colectomy with ileostomy and rectal stump sinking; in emergency settings this procedure supersedes proctocolectomy\textsuperscript{8,22}, that shows a higher morbidity and mortality (6.1% vs. 14.7%)\textsuperscript{34}. Furthermore, total colectomy with ileostomy is followed by favourable post-operative course. Nevertheless in case of massive bleeding involving the rectum, unresponsive to drug therapy or relapsing, emergency proctocolectomy and ileostomy is indicated as high mortality risk is related to rectal re-bleeding.

We advise evaluating case by case the necessity of bowel continuity restoration – after 3 months in our experience\textsuperscript{35,36} – by performing an ileorectal anastomosis or completing the surgical demolitive procedure by carrying out a proctectomy and ileoanal pouch anastomosis. Indeed primary ileorectal anastomosis following emergency colectomy is burdened by high risk of dehiscence\textsuperscript{46} and should be reserved to selected cases, proving good local and systemic healing capacity of the anastomosis\textsuperscript{22}. It is advisable, in such a case, to protect the ileorectal anastomosis with a loop ileostomy.

In the event of regression of conservatively treated toxic megacolon, elective surgery should be performed, consisting of proctocolectomy and ileoanal pouch anastomosis.

Conclusions

Toxic megacolon is a severe and life-threatening complication of ulcerative rectocolitis, requiring intensive care and proper treatment.

As regards diagnosis, we point out the importance of clinical evaluation, often suffering the pitfalls of concealed signs and symptoms in patients on corticosteroid treatment, which may sometimes lead to misdiagnosis.

Emergency surgery is mandatory when the toxic megacolon appears on corticosteroid therapy or when a conservative treatment is not effective after 48 hours.

Elective surgery should be promptly performed in all cases of successful conservative management, taking advantage of the possibility of an adequate intestinal preoperative preparation.

In emergency total colectomy and end ileostomy and rectal stump sinking is the gold standard; proctocolectomy and ileoanal pouch anastomosis are indicated in elective settings.

Riassunto

Il megacolon tossico è una condizione clinica che si associa al più alto rischio di perforazione del colon, che accresce in modo significativo – fino a triplicarla – la mortalità correlata al megacolon quando determina una peritonite diffusa.

La TC spirale addomino-pelvica si è dimostrata una indagine diagnostica fondamentale nel definire la dilatazione del colon e la sua perforazione.

Nel caso che il megacolon tossico traggia origine all’inizio di una colite grave o tossica, inizialmente è indicato il trattamento conservativo. Comunque dovrebbe essere evitato quando il megacolon tossico si manifesta in corso di terapia cortisonica. Il trattamento non operatorio non dovrebbe superare le 48 ore. Il razionale di questa strategia si basa sul fatto che la chirurgia precoce è gravata da un’incidenza di mortalità che, sebbene modesta, è comunque più elevata che nel caso del trattamento medico.

Ciononostante, l’eventuale successo del trattamento conservativo non esclude la chirurgia, che deve seguire al più presto possibile ed in fase di elezione, per prevenire la recidiva del megacolon tossico.

In emergenza la colectomia totale con ileostomia terminale rappresenta la procedura più valida. La continuità intestinale sarà restaurata caso per caso con una anastomosi ileo-retale oppure con una proctocolectomia ed un’anastomosi ileo-anale su pouch.

L’anastomosi ileo-retale fin dall’inizio va riservata a casi selezionati.

Nel caso della chirurgia di elezione, dopo adeguata terapia e regressione del megacolon tossico, c’è indicazione per una la proctocolectomia seguita da anastomosi ileo-anale su pouch.
References


