Ischemic colitis in five points: An update 2013

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La colite ischémique en cinq points: mise à jour 2013

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R É S U M É

Prérequis : La colite ischémique est la forme la plus commune de l'ischémie intestinale. La présence de diarrhée et de rectorragies doivent orienter le diagnostic. Bien que la biologie et l'imagerie puissent orienter le diagnostic, la coloscopie avec des biopsies demeure le gold standard pour poser le diagnostic d'ischémie colique.
But : Le but de notre étude était de résumer en cinq points l'épidémiologie, les caractéristiques cliniques, l'approche diagnostic et la prise en charge de la colite ischémique.
Méthodes : Revue de la littérature
Résultats : L'incidence de la colite ischémique se situe entre 3 et 10%. La présentation clinique est dominée par la forme non gangréneuse associant douleurs et sensibilité abdominale, diarrhée et rectorragies. Les étiologies les plus fréquentes sont représentées par les causes de bas débit systémique. Les analyses biologiques peuvent orienter le diagnostic, mais ne sont pas spécifiques. Les examens radiologiques, principalement la tomodensitométrie et plus récemment l'imagerie par résonance magnétique peuvent aider à pose le diagnostic positif, mais la confirmation sera obtenue par l'endoscopie avec biopsies et examen anatomopathologique. Le traitement conservateur est le plus souvent suffisant pour améliorer les lésions coliques. Le traitement chirurgical est réservé aux perforations et aux sténoses coliques.
Conclusion : L'incidence de la colite ischémique est difficile à préciser. Le diagnostic se base sur l'histoire médicale, l'examen et l'endoscopie qui est maintenant l'élément diagnostic de choix. Un diagnostic et une prise en charge précoces sont essentiels afin d'améliorer le pronostic des patients ayant une colite ischémique

M o t s - c l é s
Colite ischémique – Insuffisance mésentérique – Ischémie mésentérique

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S U M M A R Y

Background: Ischemic colitis is the most common form of intestinal ischemia. The presence of diarrhea and mild lower gastrointestinal bleeding should guide the diagnosis. Although many laboratory tests and radiographic images may suggest the diagnosis, colonic endoscopic with histological analysis of biopsies is the gold standard for identification of colonic ischemia.
Aim : The aim of this study was to resume in 5 points: the epidemiology, the clinical features, the diagnostic approach and the management of ischemic colitis in five points.
Methods: Review of literature.
Results: Incidence of ischemic colitis was between 3 and 10%. The clinical presentation is predominated by the non gangrenous form associating abdominal pain, tenderness, diarrhea and lower gastrointestinal bleeding. The most frequent causes are represented by systemic hypoperfusion. Laboratory tests can orientate the diagnosis but are unspecific. Radiographic images based on computed tomography or more recently magnetic resonance imaging may suggest the diagnosis, but the confirmation will be given by endoscopic visualization of colonic mucosa with histological analysis of biopsies. Conservative treatment is the most often sufficient to improve colonic lesions. Surgical treatment is reserved for perforations and strictures.
Conclusion: The incidence of colonic ischemia is difficult to ascertain. The diagnosis is usually made by medical history, examination, and endoscopy which have become the diagnostic procedure of choice. A high index of suspicion and prompt management are essential for optimum outcomes in patients with colonic ischemia.

K e y - w o r d s
Ischemic colitis - Mesenteric insufficiency - Mesenteric ischemia

Ischemic colitis represents all the digestive lesions due to an insufficient blood supply of the colon and rectum. It includes chronic or acute, arterial or venous ischemia [1]. It represents the most frequent digestive accident (50-60%) [2]. The first cases were described in the 1960s by Boley et al and Marston et al teams [3,4]. The etiology of ischemic colitis is multifactorial and the clinical presentation variable. The diagnosis is based on a combination of clinical suspicion, radiographic, endoscopic and histological findings. Therapy and outcome depend on the severity of the disease [5].

Aim: The aim of this review was to describe the epidemiology, the clinical features, the diagnostic approach and the management of ischemic colitis in five points.

METHODS

A review of the literature using the Pub Med Database was performed. The review included original articles and systematic reviews developed in English between 2002 and 2011 whose free full text was available on line. The keys words used were "Ischemic colitis", "Colonic ischemia", "Mesenteric insufficiency" and "Mesenteric ischemia". A critical analysis of Meta-analyzes, reviews of literature, prospective studies, therapeutic trials and retrospective series was conducted to select the most important studies on the scientific level. The review is based on prospective and retrospective analyses of large randomized, controlled multicentre trials. Results from smaller, non-randomized, openlabel studies have been included if these studies were performed with adequate methodology as judged by the authors. Data published only as abstracts have been rejected. Case reports and letters to editors were also excluded. Among more than fifty papers, twenty two were finally selected as they responded to the objectives of our study. A descriptive analysis of the collected samples was performed. Clinical, epidemiological, diagnosis modalities and treatment variables were then reported. Evidence levels and recommendation grades used in this study were slightly modified from those recommended by the GRADE system (Grading of Recommendations Assessment Development and Evaluation). The strength of evidence has been classified into three levels: A, high; B, moderate; and C, low-quality evidence (Table 1). Where no clear evidence existed, the recommendations were based on the consensus advice of expert opinion(s) in the literature.

Table 1 : Grading evidence and recommendations (adapted from the GRADE system) used in this article.

Evidence Level
1 - Meta-analyses, systematic reviews, or randomized controlled trials
2 - Case–control studies or cohort studies
3 - Nonanalytic studies, e. g. case reports, case series
4 - Expert opinion
Recommendation Grade
A - At least one study rated as 1 directly applicable to the target population
B - Studies rated as 2 directly applicable to the target population and demonstrating overall consistency of results
C - A body of evidence including studies rated as 1 or 2 directly applicable to the target population and demonstrating overall consistency of results
D - Evidence level 3 or 4 or extrapolated evidence from studies rated as 2

RESULTS

A. Point one : Types of ischemic colitis

There are two types of ischemic colitis: left-sided and right-sided ischemic colitis.

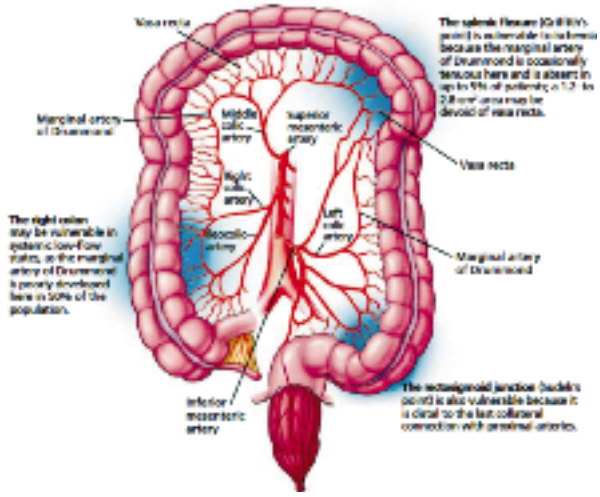
Left-sided ischemic colitis presents usually with: abrupt onset abdominal pain, bloody diarrhea, associated with low-flow states, coagulation disorders, cardiac abnormalities or after abdominal aortal surgery.

Isolated right-sided ischemic colitis is usually presents with: abdominal pain but rarely bloody diarrhea. It is usually associated with superior mesenteric artery stenosis or occlusion [6]. It occurs especially in patients with chronic renal failure requiring hemodialysis [7].

B. Point two:Vulnerable areas of the colon

The colon is protected from ischemia by a collateral blood supply via the marginal artery of Drummond, a system of arcades connecting the major arteries. The anatomy is highly variable, but certain areas are more vulnerable in some people such as shown in Figure 1 [8].

Figure 1 : The arteries supplying the large intestine. In spite of an extensive network of collateral arteries, the watershed areas between major arteries are vulnerable to hypoperfusion.



Indeed, the two most vulnerable points of the colon are:

- The splenic flexure (also called Griffith's point) is vulnerable to ischemia because the marginal artery of Drummond is occasionally tenuous here and is absent in up to 5% of patients [8]
- The rectosigmoid junction (also named Sudek's point) is also vulnerable because it is distal to the last collateral connection with proximal arteries [8]

C. Point three : Explorations for diagnosis

Endoscopy

Endoscopy is nowadays the diagnostic test of choice in establishing the diagnosis of ischemic colitis (Figure 2).

Figure 2 : Mildly active ischemic colitis with a large superficial ulcer.

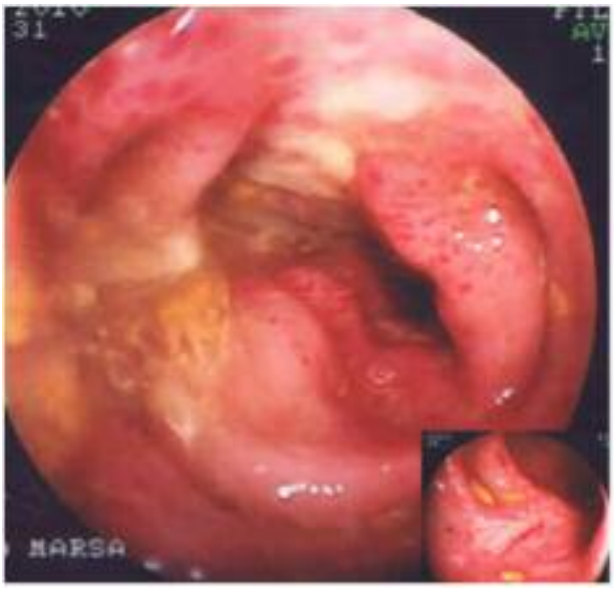
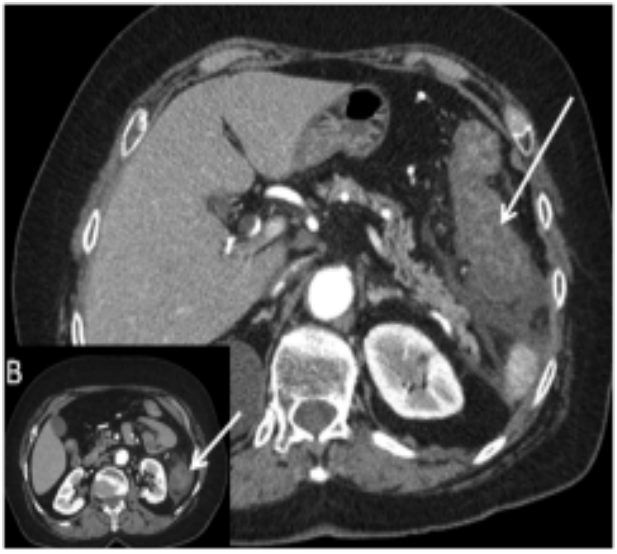


Figure 3 : Hypodense split appearance of the left colon wall after injection of contrast with thickening and infiltration of the surrounding fat.



Colonoscopy has been proved to be more sensitive to detect mucosal changes than radiography with barium enema and it can be used to obtain biopsy specimens [9].

Colonoscopy is performed without bowel preparation to prevent hypoperfusion caused by preparating solutions. Additionally, minimal air insufflations should be used to prevent perforation. It is important to mention that biopsy features are not specific, as findings of hemorrhage, capillary thrombosis, granulation tissue with crypt abscesses, and pseudopolyps can also be seen in other conditions, especially Crohn disease [10].

A recent study performed in 2011 by Beppu et al [11], clearly showed that endoscopic classifications were accurate indicators of severity and could be used to anticipate severity of IC (level 4, grade C).

Furthermore, it confirmed that ischemic heart disease and connective tissue disease were exacerbating factor associated with the severity of endoscopic findings in IC.

According Lozano-Maya study, the colonoscopy is a useful technique to evaluate the gravity and it induces a change of attitude according to the result of the same one (level 4, grade C) [12].

Computed tomography

Computed Tomography with contrast can reveal thickening of the colon wall in a segmental pattern in ischemic colitis, but this finding also can be present in infectious and Crohn colitis and shows pericolic streakiness and free fluid ((Figure 3). However, a normal imaging doesn't eliminate the presence of ischemic colitis (level 4, grade C).

Other explorations

- Other imaging explorations :

Imaging studies are often used, but the findings lack specificity. Plain abdominal radiography can help only in advanced ischemia, in which distention or pneumatosis can be seen.

Iacobellis, in a recent study published in 2012, concluded that magnetic resonance imaging may be used as a substitute for invasive procedures in diagnosing and grading acute ischemic colitis allowing for the early identification of pathological findings and their correlation with histopathological features (level 2, grade B) [13].

Sonography is a sensitive technique for the early detection of changes in the colon wall resulting from ischemia, and it can suggest this cause in the appropriate clinical setting. Color Doppler sonography may be useful in the differentiation between inflammatory and ischemic bowel wall thickening. Nevertheless, bowel gas, operator-dependent quality and poor sensitivity for low flow vessel disease limit its use in the diagnosis of IC [14].

Scintigraphy has recently been used in the diagnosis of ischemic colitis. Indium 111 (In-111) scintigraphy has demonstrated successful imaging of bowel infarction [15].

- Laboratory blood tests

There is no specific laboratory marker for ischemic colitis. However, elevated serum levels of lactate, lactate dehydrogenase, creatine kinase, or amylase may indicate tissue injury. The combination of abdominal pain, an elevated white blood cell count greater than 20 × 109/L, and metabolic acidosis suggest intestinal ischemia and infarction [8]. Others serum markers are under investigation, although usually in populations that include patients with ischemia of the small

bowel [16]. None has yet passed into routine clinical practice.

- *Angiography*

Mesenteric angiography is not indicated in mild cases. There are two exceptions where angiography may have some help: when acute mesenteric ischemia is considered and cannot be clearly distinguished from IC by clinical presentation, or when there is isolated involvement of the right side of the colon, suggesting superior mesenteric artery occlusion.

D. Point four : Medical management of ischemic colitis

Conservative therapy is in the most cases sufficient for the management of ischemic colitis. It is based on general reanimation including perfusion with intravenous fluids, hemodynamic stabilization, avoidance of vasoconstrictive agents (such as vasopressors and digitalis), and bowel rest (liquid diet or total parenteral nutrition). This is aimed to reduce intestinal oxygen requirements. Empiric antibiotics covering both aerobic and anaerobic coliform bacteria are used in order to minimize bacterial translocation and sepsis. An association of 3rd generation cephalosporin and metronidazole is generally used [8].

Medical anticoagulant treatment is also indicated. Antiplatelet agents have not been evaluated in treating ischemic colitis and are generally not used. Anticoagulation agents must be used in patients carrying hypercoagulable conditions [17]. It is important to mention that steroids have no role in the treatment of colonic ischemia. They can indeed mask the development of peritoneal signs and delay a necessary surgery. Oral cathartics and bowel preparations should also not be given because of the risk of precipitating colonic perforation or toxic dilation of the colon [2]. Because of a lack of randomized trials and limited series and case reports, it is difficult to identify the percentage of patients with acute ischemic colitis that demands emergency surgery.

E. Point five : Surgical management of ischemic colitis

Surgical treatment based on subtotal or segmental colectomy is sometimes needed in acute, subacute, or chronic ischemia [18]. Right hemicolectomy with ostomy of viable remaining colon is performed for right-sided colonic ischemia and necrosis, while left-sided colonic ischemia is managed with a Hartmann procedure. Re-anastomosis and ostomy closure are usually done after 4 to 6 months. In some cases, end colostomy or ileostomy is necessary. In all the cases, a histological examination of the surgical removed intestinal segment should be performed [19].

The indications of a surgical treatment are subdivided into two groups according to the acute or chronic nature of the ischemia:

- In acute ischemia: clinical signs of peritonitis, pneumoperitoneum, endoscopic marks of gangrene, unexplained sepsis not responding to medical treatment, persistent diarrhea, rectal bleeding, or protein-losing colopathy during more than 14 days are the main indications of a surgical treatment.
- In chronic ischemia: chronic segmental colitis with clinically recurrent sepsis, symptomatic colonic strictures or asymptomatic strictures with any suspicion of neoplasia should be surgically managed [16].

Laparoscopic second-look is a routine substitute of surgical second-look, there exist controversies regarding the timing of second-look operation. Practically, re-operation may be performed within 24h. However, Yanar et al prefer to perform the second-look operation within 72h, which promotes bowel viability and anastomotic healing [20]. With this procedure, best survival rate were not much higher than 65% [20].

Operative mortality in acute ischemic colitis is high, ranging from 10% to 65% in most series, but can be as high as 75% in the subset of patients with total colitis [21]. Timely surgery associated with pre-, trans-, and postoperative intensive care of patients should be emphasized to diminish the mortality rate (level 4, grade C) [21].

However, endoscopic dilation or stenting of short strictures due to colonic ischemia can be proposed as an alternative to surgery but the results are not well studied [22].

CONCLUSION

The incidence of colonic ischemia is difficult to ascertain, as most cases are transient and either not reported or misdiagnosed. Most cases occur in the elderly. It is associated with many precipitating factors and may be due to single-vessel occlusion or global hypoperfusion. The clinical presentation is not specific, varied and often subtle, and a high level of awareness is needed. Special consideration should be given to the condition in patients who have recently undergone cardiac or aortic surgery. The most common mechanisms are hypotension and hypovolemia caused by dehydration or bleeding that results in systemic hypoperfusion. Clinical patterns vary from transient colitis to fulminant ischemia with gangrene. Routine biochemical tests are helpful but nonspecific. The diagnosis is usually made by medical history, examination, and endoscopy which have become the diagnostic procedure of choice.

A high index of suspicion and prompt management are essential for optimum outcomes in patients with colonic ischemia.

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