



Right-sided Colonic Diverticulitis in the Young Population: A Review Article

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Abstract

Although it is a condition of older adults, diverticular disease (especially of the right colon) is sometimes seen in patients under 50 years old. In the past two decades, reports on right-sided colon diverticulitis in the young population have increased. Therefore, we aimed to review the latest literature regarding this disease. Etiological and epidemiological studies give us partial answers on the occurrence of this condition. The sidedness and the fact that it occurs in younger populations make this condition important in terms of early and proper diagnosis to avoid unnecessary surgical explorative laparoscopies, laparotomies, appendectomies, etc. Most cases with acute right-sided colonic diverticulitis are mild, thus requiring a conservative treatment. However, complicated right-sided colonic diverticulitis is treated with some intervention (percutaneous drainage or surgery). No treatment guidelines are present yet, and the approach should be individualized and tailored according to the patient's condition and the severity of the diverticulitis. In case of clinical deterioration, surgery should be considered regardless of whether it is open or minimally invasive.

Keywords: Diverticulitis, Colonic; Diverticular disease; Conservative treatment

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Introduction

Diverticula of the colon are pathologic alterations of its wall, resulting in "pocket" formation and herniation of the colon structures (mucosa, submucosa) through the colonic wall (1). The site of herniation, in most cases, is where the blood vessels (vasa recta) penetrate the colonic wall (2). Colonic diverticula are a common condition and one of the most common colonoscopy findings (3). Although it is a disease with increasing incidence with age, in the past few decades, diverticular diseases

and diverticulitis have been reported in people under 50 years old (4-7). Geographic differences in the colonic diverticulosis have been described. The industrialized countries of the West report a much higher prevalence of diverticular disease in comparison to the countries of Asia and Africa (8).

One of the most common complications of diverticular disease is acute diverticulitis, which might require surgical intervention if complicated (9, 10). Reports on right-sided colonic diverticulitis (RCD), including patients below the age of 50, are increasingly present in the literature, especially in

the Asian population (11-16).

Etiology and Epidemiology

According to the sidedness of the diverticular disease, the dominance of right-sided diverticulosis compared to left-sided was 27.5–90.2% (11-14, 16, 17). Although colonic diverticulosis is predominant in the Western world and rare in Asian countries, reports from the Far East countries show the predominance of right-sided diverticulosis in their populations. Risk factors described to be responsible for right-sided diverticulosis are heterogeneous. The congenital theory is considered when the diverticula are diagnosed in young people, are solitary, and true (containing all the parts of the colon wall) (18). Solitary diverticula exist in 20–81% of cases (19, 20). On the other hand, the acquired theory evidence shows that the number and location of the diverticula change over time, thus increasing their number and affecting the left side of the colon (21).

Increased intraluminal pressure and disordered large-bowel motility play a role in the pathogenesis of right-sided diverticulosis (22, 23).

Contradictory data on the dietary fiber intake influence the right-sided colonic diverticula occurrence is present. Song et al. found no influence of dietary fiber intake on the presence of diverticulosis (24). In contrast, in a large prospective cohort of 43,880 men, a diet high in dietary fiber decreased the risk of diverticular disease (25).

The genetic hypotheses on right-sided colonic diverticulosis rely on different assumptions, such as the weaker structures of the colon in Asians (genetically influenced) and gene polymorphisms of certain genes responsible for vascular smooth muscle cell proliferation and for the mucosal response to gut bacteria and low-grade inflammation (24, 26).

Presentation and Diagnosis

Abdominal right lower quadrant pain and tenderness are the main complaints (84.6% of patients), followed by nausea and/or vomiting in 45% of patients and fever and chills in 36%. Diarrhea is reported to be present in about 38.5% of cases with cecal diverticulitis (6, 27). Laboratory findings reveal elevated inflammatory markers in more than half of the patients (28). These symptoms inevitably lead the clinician to think of acute appendicitis, especially if the acute diverticulitis presents for the first time in the patient. Thinking of acute appendicitis in RCD may influence the proper and timely diagnosis and treatment.

Abdominal ultrasonography is the first diagnostic tool in patients with abdominal right lower quadrant pain. Its findings may show surrounding echogenic fat, thickening of the bowel wall, enlarged regional lymph nodes, intradiverticular echogenic material, and fluid collection (28). Abdominal computerized tomography (CT) is widely used to diagnose colonic diverticulitis and makes a distinction from acute

appendicitis. It has a specificity of 90–95% (29). The widely accepted Hinchey classification is based on the CT findings in patients with acute diverticulitis and is used for treatment planning (30, 31).

Treatment

The World Society of Emergency Surgery (WSES) 2020 Update defines acute right-sided colonic diverticulitis as a separate clinical entity. Still, no guidelines are present yet. The principles of treatment of acute RCD are suggested to be similar to those of acute left-sided colonic diverticulitis (32). Evidence shows that acute RCD in Asians presents with predominantly mild disease, thus requiring conservative management that comprises bowel rest, dietary changes, antibiotics, and rehydration. The rate of non-operatively treated patients ranges between 60.6–89.6% (5, 13-15, 33).

Literature suggests using mesalazine in the conservative treatment of acute RCD (34). However, the latest systematic reviews showed no certain effect of mesalazine in treating acute RCD or preventing its recurrence (35, 36).

Epifani and colleagues' systematic review showed an increase in the non-operative management rate of RCD over 29 years. For this to be achieved, the authors point out the importance of the proper diagnosis since it will allow a successful conservative treatment of an uncomplicated acute RCD (37). Literature claims that conservative management of acute RCD may be conducted safely, even in cases with complicated diverticulitis (Hinchey II) (33). Non-conservative treatment (abdominal drainage) is provided in cases with abdominal abscess formation (Hinchey II) in acute RCD (29). On the contrary, there are reports of the Hinchey II stage being treated successfully with conservative treatment (38). Although it is not the standardized approach as in the left-sided colonic diverticulitis, series with abdominal drainage under CT are present. The reported rate of abdominal drainage due to abscess formation is 2.1–13.5% (14, 28, 39).

Having in mind the recommendations of WSES 2020, the following surgical strategies for complicated acute RCD have been proposed: appendectomy with postoperative antibiotic treatment, right hemicolectomy, diverticulectomy with appendectomy, and ileocecal resection (40). In a recent retrospective cohort, the surgical strategies used included appendectomy with postoperative antibiotic treatment, diverticulectomy, with appendectomy, and right hemicolectomy/ileocecal resection (41).

In the study of Monari et al., the vast majority of the patients were treated successfully with laparoscopy (42). Another North American retrospective study was conducted on 2233 patients treated for RCD with segmental colectomy, of whom 592 were treated laparoscopically. The authors concluded that laparoscopy is a safe and efficient approach to

treating RCD (43).

A recent retrospective cohort showed that surgery for acute RCD is equally safe as the conservative treatment. Still, it should be considered in patients with present recurrence risk factors (41).

To conclude, treatment options in acute RCD should be tailored to each patient (44).

Complications

Complicated diverticulosis may be further “complicated” by repetitive attacks that can lead to stenosis of the affected right colon and the formation of a fistula with other organs (45). This can give rise to diagnostic dilemmas and therapeutic difficulties. For instance, colonic stenosis may mimic advanced colon cancer (46).

Recurrence of Diverticulitis

Colonic diverticulitis is a well-known occurrence in patients following successful conservative treatment of an acute episode. The “diverticulitis sidedness” is proved to be a risk factor for recurrence. Hence, patients with sigmoid and descending colon diverticulitis are at high risk of recurrence. In Sung’s study, the recurrence rate for cecum/ascending diverticulitis was 8% (47). A pooled recurrence rate in the recent systematic review and meta-analysis of Huang et al. was 10% (48). Ma et al. showed significant differences in recurrence between patients treated with conservative treatment and surgery, with the latest having a significantly lower rate (16.53% vs 2.44%, $P=0.020$) (41).

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Prognosis

Since most cases are reported to be in mild form, the prognosis of this condition is good. Yet, severely complicated forms of acute RCD are associated with increased morbidity and mortality. The reported mortality rate for complicated diverticulitis is up to 5% (49).

Conclusion

This review of the latest medical data for acute right-sided colonic diverticulitis revealed that it is a much more common condition that has been reported in the past. It is associated with younger age (under 50), and its prevalence is elevated in the Asian population. Mostly, it presents in mild forms, treated with conservative treatment. Despite the lack of recommendations and guidelines for the treatment strategy, current data is generally sufficient to choose a successful treatment for different stages of acute right-sided diverticulitis.

Authors’ Contribution

AN, substantial contributions to conception and design, IP and RS: revising it critically for important intellectual content; all authors approved the final version. All authors Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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