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Derleme Makalesi

An Overview of Diverticulitis

Deniz ÖZBİLİCİ[1*], Yusuf ÖZER[2]

[1]Siirt Üniversitesi, Siirt Eğitim ve Araştırma Hastanesi Genel Cerrahi Kliniği
[2]S.B.Ü Dışkapı Yıldırım Beyazıt E. A. Hastanesi Genel Cerrahi Kliniği

*Sorumlu yazar: denizozbilici@yahoo.com

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Abstract

Diverticulitis is infection or inflammation of pouches in intestines. Although it is still uncertain what causes diverticula to develop, disordered colonic motility, alterations in colonic wall resistance and dietary fibre deficiency are causes of colonic diverticula. Inflammation plays a main role in the disease. Inflammation plays an important role in disease, with or without infection. All management strategies of predicting, presentation, imaging, clinical features, variations, diagnosis, treatment, surgery, conservative management, outcomes, risks, follow up and prevention of diverticulitis are important. Quality of life following treatment is the most important part determining the management options. comparison of clinical and pathological findings of patients and recommendations some of which given below in this review are educative.

Keywords: Diverticulitis, diverticulosis, colonoscopy, colectomy, perforation, sigmoidectomy, laparoscopy

INTRODUCTION

Diverticular disease is characterized by pouches as a result of weakness in the bowel wall, that may become infected and inflamed called as diverticulitis which has potential for severe complications (Sigurdsson et al., 2017). Diverticulosis is among few diseases, incidence of which varies greatly globally. Its prevalence is age-dependent. Development of diverticula or herniation of the mucosa through the colonic wall increases with age. Prevalence is %5 under age of 40y and it increases to 65% over age of 65y. 80–85% of patients, diverticula is asymptomatic (Comparato et al., 2007). Diverticula may become inflamed and result in diverticulitis. Bacteria and fungi interaction maintain homeostasis in the gut ecosystem and bacterial dysbiosis has relation with the pathogenesis of diverticulitis. But Factors that cause diverticulitis in this ecosystem is still mostly unstudied (Schieffer et al., 2017) Disordered colonic motility, alterations in colonic wall resistance and dietary fibre deficiency are causes of colonic diverticula. Inflammation plays a role in the disease (Comparato et al., 2007). Colonic diverticulosis is quite common and many patients may also develop diverticulitis or different complications of diverticular disease. Genome-wide association studies (GWAS) identified three major genetic susceptibility factors for both conditions but was not able to discriminate diverticulitis and diverticulosis (Reichert et al., 2020). Clinical features of right and left colonic diverticulitis may be different due to difference of anatomical locations and embryologic origins of each colonic segment (Lee et al., 2020). International guidelines recommend colonoscopy following hospitalisation for acute diverticulitis. However, there is little evidence regarding the efficacy of this practice, especially for patients with CT-diagnosed uncomplicated left-sided diverticulitis (O'Donohoe et al., 2019). Sex, obesity, immunodeficiency and old age are predictive factors for severity of diverticulitis. Surgery for acute complications of diverticular disease of sigmoid colon carries significant morbidity and mortality rates (Comparato et al., 2007). In patients with acute diverticulitis and signs of acute peritonitis, detection of extra luminal air by computed tomography scan is generally considered as indicator of an urgent need for surgery. Although management of perforated acute diverticulitis is traditionally open sigmoidectomy, laparoscopic drainage/lavage followed by delayed elective sigmoidectomy is also reported (Costi et al., 2012). Current guidelines are recommending computed tomography for diagnosis of diverticulitis and routine follow-up colonoscopy to exclude cancer. Data supporting routine colonoscopy following acute diverticulitis are rare and conflicting (Sallinen et al., 2014).

Diagnosis

Therapy goals in diverticular disease include improvement of symptoms, prevention of recurrent attacks and prevention of complications of the disease such as diverticulitis. Diverticulitis is a common clinical complication of diverticular disease (10–25% of patients with diverticulosis). Most of the acute diverticulitis patients respond well to conservative treatment, and surgery requirement is only 15–30% (Comparato et al., 2007). To diagnose the initial onset of diverticulitis, radiological evidence of the presence of inflammation using computed tomography (CT) is essential. CT is also required when the severity of symptoms suggests a perforation or an abscess has occurred. Classification of complicated

and uncomplicated diverticulitis is based on CT scan findings, severity of symptoms, and patient history; this classification (complicated or uncomplicated diverticulitis) is used to guide the treatment of diverticulitis (You et al., 2019). Elective sigmoid colectomy for recurrent uncomplicated diverticulitis is controversial and it should be decided on individual base. Elective sigmoidectomy is an appropriate treatment option for recurrent uncomplicated diverticulitis to maintain quality of life. Especially in women, the quality of life increases if laparoscopic surgery is performed (Justin et al., 2020). Indications for elective colectomy in uncomplicated diverticulitis are unclear. Precision in diagnosis for suspected patients for acute appendicitis is important due to increased risk of perforation in appendiceal diverticulitis (Koji et al., 2020). Inflammation within the diverticulum may results in diverticulitis which may be complicated by an intraluminal abscess. But complicated diverticulitis with abscess formation is usually considered as an extraluminal complication (Barkin et al., 2016). Predictive value of acute phase reactants is not well known in perforated acute sigmoid colon diverticulitis. To predict the perforation, clinical examination alone may be hazardous. If perforation is suspected, appropriate diagnostic tools such as computed tomography (CT) should be used and if surgical intervention is necessary and indicated, it should not be avoided. A CRP below 50 mg/l suggests that perforation is unlikely in acute sigmoid diverticulitis whereas a CRP higher than 200 mg/l is a strong indicator of perforation (Käser et al., 2010). It is probable that patients with colonic diverticulosis develop subsequent complications such as acute colon diverticulitis and perforation. When more than one episode of diverticulitis occurs, the probability of experiencing problems and recurrent infections throughout the life of the individual is 70-90%. For the diagnosis, treatment and management of acute colonic diverticulitis and related complications, medical imaging with computed tomography is fundamental and identified as a gold standard during last decades. Several magnetic resonance imaging protocols are considered suitable for imaging acute colonic diverticulitis. Rapid technological improvements of magnetic resonance imaging, increasing cost-effectiveness and applicability in healthcare should also be considered. Gradual rise in radiation dose by increased computed tomography demand should be considered important especially for younger acute colonic diverticulitis patients (Jerjen, 2021). Diverticulitis is a common diagnosis in the emergency departments. Computed tomography (CT) of the abdomen and pelvis is most commonly used imaging techniques for diagnosis. But computed tomography has disadvantages of radiation, high cost, low availability and contrast-induced nephropathy possibility. But computed tomography has disadvantages of radiation, high cost, low availability and contrast-induced nephropathy risk. Ultrasound is a portable, low cost without radiation and contrast free alternative. In a systematic review containing 700 total patients in seven studies, ultrasound was found to be 89% sensitive. Ultrasound is also specific for diverticulitis diagnosis and is an alternative to computed tomography in emergency departments (Holladay et al., 2019). Presentation of Meckel's diverticulitis presentation often mimics other intraabdominal pathologies. In most cases, diagnosis occurs during exploratory surgery. Preoperative

computed tomography diagnosis of an inflamed Meckel's diverticulum is rarely reported. Preoperative diagnosis of an inflamed Meckel's diverticulum with computed tomography is rarely reported. Diagnostic criteria include visualization, location continuous with the distal ileum, size, mural thickness, content of the diverticulum, and identification of a normal appendix. Diagnostic criteria include visualization, location continuous with the distal ileum, size, mural thickness, content of the diverticulum, and identification of a normal appendix. Most patients with Meckel's diverticulitis could be diagnosed with computed tomography scan of the abdomen and pelvis, and accurate preoperative diagnosis greatly facilitates surgical intervention (Mullen et al., 2013). A systematic search performed on 92 publications highlighted that computed tomography is the most effective test in the diagnosis and staging of acute diverticulitis. For uncomplicated diverticulitis patients without related comorbidities, outpatient treatment can be performed. At uncomplicated acute diverticulitis patients, conservative treatment is aimed. Elective surgery must be conducted on individual basis. Laparoscopic approach may be technically demanding but appropriate for elective treatment of diverticulitis (Biondo et al., 2012). Tan et al. (2016) conducted a literature search to detect predictors of severe acute diverticulitis. They found first episode and co-morbidities (but not age or gender) as predictors of diverticulitis. First episode, co-morbidities, steroid and non-steroidal anti-inflammatory drug use, high C-reactive protein levels on admission are predictors of severe diverticulitis. Age, gender, high white blood cell count are not predictors of severity. Computer tomography was the gold standard for diagnosing complicated cases (Tan et al., 2016).

Treatment

Acute diverticulitis is a diagnostic and therapeutic challenge for general surgeons (Francis et al., 2018). Hartmann's procedure is still the most common procedure for acute diverticulitis. Hartmann's procedure is safe for severely ill patients but many will live with a permanent colostomy. Although anastomosis at the time of surgery for diverticulitis is an alternative approach to Hartmann's procedure, there have been concerns about the safety of this approach (Acuna et al., 2019). Hartmann's procedure is still the most frequent used procedure for diffuse peritonitis due to perforated diverticulitis (Trenti et al., 2011). Laparoscopic peritoneal lavages can be an alternative to sigmoidectomy for perforated diverticulitis patients. But in a study of Vennix et al. (2015) superiority of laparoscopic lavage compared with sigmoidectomy in patients with purulent perforated diverticulitis was assessed for long-term morbidity and mortality. Four patients were died after lavage and six patients were died after sigmoidectomy during 12 months. Laparoscopic lavage was not found superior to sigmoidectomy for the purulent perforated diverticulitis treatment (Vennix et al., 2015). Four patients were died after lavage and six patients were died after sigmoidectomy during 12 months. Laparoscopic lavage was not found superior to sigmoidectomy for the purulent perforated diverticulitis treatment. Laparoscopic management of diverticular disease is evolving. Concerns were raised in the past because laparoscopic resection for diverticulitis is often difficult, technically demanding and occasionally hazardous. But it is found that laparoscopic operation was associated with lower morbidity, lower

mortality, shorter hospital stays, and lower hospital charges compared to the open operation for diverticulitis (Masoomi et al., 2011). In haemodynamically stable, immunocompetent patients younger than 85 years, primary anastomosis is preferable to Hartmann's procedure as a treatment for perforated diverticulitis (Hinchey III or Hinchey IV disease) (Lambrichts et al., 2019). Patients having persisting or recurrent complaints following left-sided diverticulitis episode may be managed with either conservative measures or elective sigmoidectomy. Although elective sigmoidectomy is not free of complications, results in better quality of life than conservative management in patients with recurrent and persisting abdominal complaints after an episode of diverticulitis (Van de Wall, 2017). Differences were compared between patients that had undergone Hartmann's procedure or resection with primary anastomosis in a study of Vermeulen et al. Survivors after perforated diverticulitis had a worse quality of life than the general population, which was mainly due to the presence of an end colostomy. Quality of life may improve if these stomas are reversed or not be performed in the first place (Vermeulen et al., 2010). With the use of abdominal vacuum therapy, Kafka-Ritsch et al. (2012) have developed a damage control concept for patients with perforated diverticulitis and generalized peritonitis. The primary purpose of this concept was to accelerate healing and allow for bowel reconstruction in second-look surgery in patients with perforated diverticulitis and generalized peritonitis (Kafka-Ritsch, 2012). Recent studies reveral reduced role for aggressive antibiotic or surgical intervention for chronic or recurrent diverticulitis than thought (Morris et al., 2014). There is limited data supporting recommendation for colonoscopy following diagnosis of acute diverticulitis (Sai et al., 2012). Up to 25% of diverticulosis patients, fever, pain and palpable mass in the left lower quadrant occurs. In the early 20th century, intervention focused on surgery. Currently, a conservative medical route utilizing antibiotics selectively is recommended in cases of uncomplicated diverticulitis. Several studies question the need for antibiotics. Recurrence is a relative indication for surgical intervention, and percutaneous drainage is offered for cases with an abscess greater than 3 cm (Krzyzak, 2019). Regenbogen et al. (2014). reviewed sigmoid diverticulitis surgery data. They found that ‘’complicated recurrence following recovery from an uncomplicated episode of diverticulitis was rare and at age younger than 50 years and two or more recurrences do not increase complications risk. Chronic symptoms may persist even after resection in 5-22% of patients. Prophylactic surgery is generally not recommended for average-risk patients with diverticulitis. Decisions to proceed with colon resection should be based instead on the patient-reported frequency and severity of diverticulitis symptoms. The prior standard for proceeding with elective colectomy following two episodes of diverticulitis is no longer accepted. Decisions to proceed with colectomy should be made based on consideration of the risks of recurrent diverticulitis, the morbidity of surgery, ongoing symptoms, the complexity of disease, and operative risk. Laparoscopic surgery is preferred to open approaches. Recent evidence suggests that existing 8guidelines should be updated’’ (Regenbogen, 2014; Kafka-Ritsch, 2012). Diverticulitis is much less common in the jejunum than in colonic diverticula. it may be due to larger

diverticulum size, better intraluminal flow and relatively sterile jejunal content. Acute intestinal obstruction, diverticular bleeding and mainly perforation with mesenteric abscess, localized or generalized peritonitis are major complications of jejunal diverticulitis. The best diagnostic imaging modality for small bowel diverticulitis as well as its complications is multi-detector computed tomography. Nonsurgical treatment for jejunal diverticulitis without peritonitis is usually sufficient, but does not prevent recurrence of diverticulitis. Surgery is a must in case of generalized peritonitis or and usually mandatory in voluminous local abscess complicating small bowel diverticulitis (Harbi, 2017). ‘’Outpatient treatment is recommended in afebrile, clinically stable patients with uncomplicated diverticulitis. For patients with uncomplicated diverticulitis, antibiotics have no proven benefit in reducing the duration of the disease or preventing recurrence, and should only be used selectively. For complicated diverticulitis, non-operative management, including bowel rest and intravenous antibiotics, is indicated for small abscesses; larger abscesses of 3–5 cm should be drained percutaneously. Patients with peritonitis and sepsis should receive fluid resuscitation, rapid antibiotic administration and urgent surgery. Surgical intervention with either Hartmann procedure or primary anastomosis, with or without diverting loop ileostomy, is indicated for peritonitis or in failure of non-operative management. Colonoscopy is recommended for all patients with complicated diverticulitis 6 weeks after CT diagnosis of inflammation, and for patients with uncomplicated diverticulitis who have suspicious features on CT scan or who otherwise meet national bowel cancer screening criteria’’(You, 2019).

CONCLUSION

The heterogeneity of patients with colonic diverticular disease means that both elective and urgent treatment should be tailored on an individual basis. Recent evidence suggests that existing guidelines should be updated.

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