

Clinical Science

Predictive factors for colonic resection in patients less than 49 years with symptomatic diverticular disease



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KEYWORDS:

Diverticular disease;
Diverticulitis;
Predictive factors;
Younger patients;
Surgical intervention

Abstract

BACKGROUND: Diverticular disease is a condition strongly associated with low-fiber intake and obesity. There have been reports of an increasing incidence in younger individuals ranging from 12% to 21% of all cases. The aim of this study was to evaluate the management of complicated diverticular disease in patients less than 49 years and attempt to identify factors predictive of a more virulent course.

METHODS: An analysis of a prospectively updated database of all patients admitted with a primary diagnosis of acute diverticulitis from 2005 to 2013 was performed. Data collected included age, length of stay, inflammatory markers on admission, use of computed tomography (CT), and Hinchey Classification. SPSS version 22 was used for statistical analysis, and a *P* value of .05 or less was considered significant.

RESULTS: A total of 120 (54 female and 66 male) patients less than 49 (28 to 49, 42.1) years were noted to have a diagnosis of acute diverticulitis. Twelve patients (10%) required colonic resection for complicated diverticulitis. Histological evaluation revealed 5 cases of stricture, 2 obstruction, and 5 perforations. On multivariate analysis, predictors of operative intervention and/or colonic resection included, (hazard ratio [95% confidence interval]) patients aged 40 to 49 years (.92 [.9 to .95]) and elevated C-reactive protein on index admission (1.4 [1.32 to 1.54]). Females were less likely to undergo colonic resection compared with males (1.18 [1.15 to 1.2]). Median length of stay was 4 days (1 to 48) for patients managed nonoperatively and 13 days (5 to 27) for those who underwent surgery.

CONCLUSIONS: Most younger patients with acute diverticulitis can be treated successfully by conservative means. However, a proportion of patients require aggressive surgical management.

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Diverticular disease is a condition found predominantly in Western populations and is strongly associated with low-fiber intake and obesity.^{1,2} Diverticular disease has traditionally been considered as a disease of older people, affecting greater than 60% of the population aged greater than 80 years.³ Approximately 4% to 15% of those who have diverticulosis will become symptomatic with a range of presentations from mild abdominal pain to frank feculent peritonitis.⁴

Diverticular disease in the younger patient is often considered to be a distinct entity because of its unusual clinical behavior.⁵ It has become increasingly common in this population because of the growing impact of a Western lifestyle on younger people. Patients under 45 years now represent 16% of all hospital admissions with acute diverticulitis.⁶ This is reflective of population data reported from North America. In contrast, there have been fewer publications reporting on management of diverticular disease in younger patients from European centers.^{7,8} Furthermore, it has been reported that diverticulitis takes on a more virulent course in younger patients and surgery after a single episode of diverticulitis has been recommended previously.⁹ In light of this evidence, it was decided to evaluate the management of complicated diverticulitis in a younger patient cohort with symptomatic diverticular disease and attempt to identify factors that may be predictive of a more virulent course.

Methods

This study was undertaken at Mayo General Hospital, a 330-bed teaching hospital affiliated to the National University of Ireland, Galway. A review of a prospectively updated database was carried out on all patients under the age of 49 years admitted with a diagnosis of acute diverticulitis from January 2005 to December 2013. Patients were included in the study if they had radiological evidence of diverticulitis or convincing clinical evidence including localized left lower abdominal pain, pyrexia, and a raised white blood cell count. During the first 2 years of the study (2005 to 2006, $n = 31$), computed tomography (CT) was not performed routinely to evaluate patients presenting to our institution with acute diverticulitis. Demographic details (age and sex), length of stay, levels of inflammatory markers on admission, radiological investigations performed, and any surgical or radiological interventions including relevant histology were all recorded. The Hospital In-Patient Enquiry database is the principle source of demographic, clinical, and administrative data on admissions and discharges in Irish hospitals. This was used to analyze admission trends for cases of acute diverticulitis in patients of all ages over the 9-year study period. These data were used to look at the number of admissions for acute diverticulitis for all ages and the number of patients over 49 years undergoing surgical intervention. SPSS version 22 was used for statistical

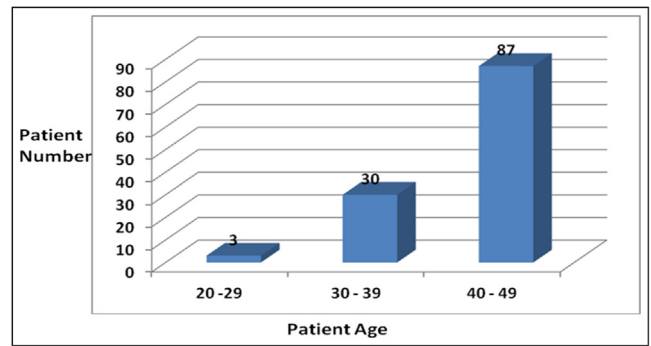


Figure 1 Age distribution of patients presenting with a diagnosis of acute diverticulitis ($n = 120$).

analysis, and statistical significance was defined as a P value less than .05 and 95% confidence intervals (CIs) excluding 1.0. Cox proportional hazards regression analysis was performed to analyze risk factors predicting operative intervention and colonic resection.

Results

During the 9-year study period, 120 (66 male and 54 female) patients under the age of 49 years were admitted with acute diverticulitis. There were a total of 151 admissions (85 male and 66 female) within this cohort of patients during the study period. Patient ages ranged from 28 to 49 years with an average of 42.1 years and a median of 43 years. Most patients were aged 40 to 49 years, making up 72% of the total number of patients (see Fig. 1). Average length of stay was 4.7 days (1 to 48) for patients managed nonoperatively and 12.9 days (5 to 27) for those who underwent surgery.

The overall number of admissions for all age groups with a primary diagnosis of acute diverticulitis was analyzed during the 9-year study period using the Hospital In-Patient Enquiry database. The percentage of admissions in the under 49 year age group increased over the study period, representing 9.1% of all admissions in 2005 and rising to 12.5% in 2013 ($P = .078$, Fig. 2).

Characteristics of operative patients (colonic resection, $n = 12$) were compared with patients who were conservatively managed or treated with laparoscopic washout and drainage ($n = 108$) (Table 1). Nonoperative and operative patients differed significantly ($P < .05$) by numerous characteristics, with operative patients more likely to be male, aged 40 to 49 subgroup, elevated C-reactive protein (CRP) on index admission and Hinchey 4 classification on CT abdomen and pelvis ($P < .05$). The mean CRP for operative patients was 134 (5.1 to 359.3) compared with 59.9 (.3 to 461) in the nonoperative group ($P < .05$). The area under the curve on the receiver operating characteristic (ROC) curve is .745 (see Fig. 3). The optimal threshold CRP calculated from the receiver operating characteristic curve was 69.5 mg/L (sensitivity 68.9% and specificity 66.9%).

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