Current management of acute diverticulitis: a survey of Australasian surgeons

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ABSTRACT

AIMS: To evaluate the current practice and degree of consensus amongst Australasian surgeons regarding non-surgical management of acute diverticulitis (AD) and to determine whether newer approaches to management are being translated into practice.

METHODS: An online survey was distributed to all Australasian colorectal surgeons and all general surgeons in the Auckland region. Responses were collected over two months and analysed to identify points of consensus and areas of significant difference in opinion between these groups.

RESULTS: Responses were received from a total of 99 of 200 (49.5%) colorectal surgeons, and 19 of 36 (52.7%) general surgeons. The Hinchey Classification was the most commonly used measure of disease severity, used by 67 (95.7%) colorectal surgeons and 12 (92.3%) general surgeons. There was lack of consensus around important aspects of AD management, including antibiotic therapy, and use and modality of follow-up imaging. Selective antibiotic therapy and use of anti-inflammatory medication as adjuncts to treatment were practised by a minority of those surveyed.

CONCLUSIONS: Newer approaches to management were being utilised by some respondents. The lack of consensus regarding management of AD may be a consequence of a paucity of high-level evidence to support specific management approaches, particularly in patients with uncomplicated AD.

Left colon diverticulosis is the most commonly found abnormality on colonoscopy.[1] Current estimates are that less than 10% of people under 40 years old, and 50–60% of people over 85, have diverticulosis.[1] Ten to twenty-five percent of those with diverticulosis will experience some form of diverticular disease (DD) and 15–20% of those with symptomatic disease are diagnosed with acute diverticulitis (AD).[2]

Data from New Zealand also show an increasing trend in the number of acute admissions for DD, from 1,443 admissions in 2001 to 2,701 admissions in 2011.[3] Data from North America also indicate that hospital admissions due to AD are increasing, although rates of admission for perforation from AD have remained stable.[4,5]

The bulk of diverticulitis admissions are for uncomplicated AD (evidence of inflammation without abscess, perforation or peritonitis based on the modified Hinchey Classification).[6,7] A single bout of uncomplicated AD confers minimal long-term or serious health risks to patients.[5] Currently there is a shift towards a more conservative approach to uncomplicated AD with the aim of reducing unnecessary interventions and ensuring the efficient use of limited healthcare resources. Recent studies have demonstrated that patients with uncomplicated AD can be safely managed in the outpatient setting [8-10] and with limited use of antibiotic therapy.[10,11] This approach is supported in recently published clinical guidelines.[12]

The aim of this survey was to evaluate the current practice of colorectal specialists in Australasia, and general surgeons in New Zealand, regarding the medical management of AD in order to assess whether newer approaches to management were being translated into practice, and to provide context for further local research into AD.

Table 1: Absolute indicators for hospital admission, responses from New Zealand surgeons only. A p-value <0.05 was considered to be significant. Bold indicates positive consensus.

Admission variable	NZ colorectal surgeons (%)	General surgeons (% positive)	p-value
First episode of acute diverticulitis	2 (9.5)	7 (36.8)	0.039
Patient age	0 (0.0)	0 (0.0)	-
Patient comorbidity	8 (38.1)	6 (35.3)	-
Temperature <36 °C or >38 °C	14 (66.7)	15 (78.9)	-
Heart rate >90 per minute	11 (52.4)	13 (68.4)	-
Respiratory rate >20 per minute	14 (66.7)	13 (68.4)	-
Signs of hypovolaemia	**20 (95.2)**	14 (73.7)	-
Localised peritonism	12 (57.1)	12 (63.2)	-
PR bleeding	4 (19)	5 (26.3)	-
Need for intravenous analgesia	**20 (95.3)**	15 (78.9)	-
Not tolerating oral intake	**18 (85.7)**	**17 (89.5)**	-
White blood cells <4x109/L or >12x109/L	6 (28.6)	7 (36.8)	-
CRP > 10	0 (0.0)	2 (10.5)	-
CRP >40	0 (0.0)	7 (36.8)	0.002
CRP >100	10 (47.6)	8 (42.1)	-

Method

Ethics approval for this study was obtained from the University of Auckland Human Participants Ethics Committee (#012408), as well as Auckland, Counties Manukau and Waitemata District Health Boards, prior to distribution of surveys. The web-based survey was distributed by email to all members of the Colorectal Surgery Society of Australia and New Zealand (CSSANZ) and to general surgery consultants at the three tertiary centres in Auckland. The survey was open for 2 months, with a reminder email sent out at the end of the first month.

The survey aimed to collect information about how often respondents managed patients with AD, followed by a series of questions regarding: rationale for hospital admission; assessment of severity; current management of uncomplicated and complicated AD; and the utilisation of selective use of antibiotics and anti-inflammatory agents. Uncomplicated AD was defined as AD with evidence of inflammation without abscess or perforation on CT scan (modified Hinchey criteria Ia).[6] Some questions required yes/no answers, while others asked for responses on a 5-point Likert scale, with 1 meaning always, 3 sometimes, and 5 never. Consensus was defined as ≥80% agreement at either end of this scale (1/2 consensus, or 4/5 consensus). Additionally, there were a number of questions where qualitative information was gained through free-text responses.

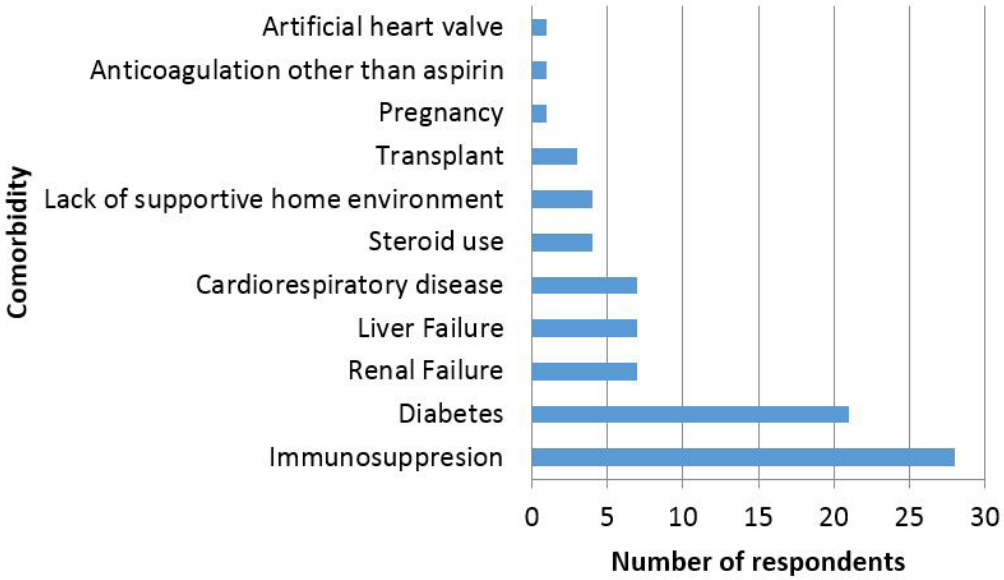
Statistical analysis

Statistical analysis was performed using SPSS for Windows (Version 19; SPSS, Chicago, Illinois, US). Descriptive statistics and figures were used to summarise the data. Univariate analysis was carried out using the chi-squared test for categorical data; one-way analysis of variance (ANOVA) for parametric continuous data, and the Mann-Whitney U and Kruskal-Wallis test for non-parametric data.

Results

Responses were received from a total of 99 of 200 (49.5%) colorectal surgeons, and 19 of 36 (52.7%) general surgeons who were approached to participate in the study. Of the colorectal surgeons, 78 (78.8%) were based in Australia and 21 (21.2%) were based in New Zealand—the response rate for New Zealand members of CSSANZ was 65.6%. The majority of both groups saw patients with AD at least once a month (91.9% in the colorectal group and 84.2%

Figure 1: Absolute indicators for hospital admission.



in the general surgeon group). The median number of patients seen per week was 2 (1–5) and 5 (2–6.5) patients, respectively.

Admission criteria

Factors seen as an absolute indication for hospital admission are listed in Table 1. General surgeons were more likely to select first episode of AD and a moderately raised CRP as indications for admission than colorectal surgeons. There were no significant differences between the responses of New Zealand and Australian colorectal surgeons.

Comorbidities that were considered absolute indicators for admission by either group are displayed in Figure 1.

Assessment of severity

Twenty-eight (28.6%) colorectal surgeons and six (35.3%) general surgeons stated that there was a severity score they routinely used when assessing patients with AD. The majority of clinicians in both groups stated that they used the Hinchey Classification (67 (95.7%) of colorectal surgeons and 12 (92.3%) of general surgeons). The Mannheim Peritonitis Index (1 (1.4%) of colorectal surgeons and 1 (7.7%) of general surgeons) and Acute Physiology and Chronic Health Evaluation II (APACHE II) (10 (7%) of colorectal surgeons and 1 (7.7%) of general surgeons) were used by a minority of respondents. There were no significant differences in the responses of the two groups.

Management of uncomplicated AD

There was a wide variety of practice amongst the respondents. The use of inpatient colonoscopy met a 4/5 consensus, (rarely or never used) and was the only aspect of management where consensus was reached. The general surgeon group reached a 1/2 consensus (always or usually) regarding intravenous antibiotics, with 82.4% of respondents reporting their frequent use in managing uncomplicated AD.

Management of complicated AD

Both groups used bowel rest, intravenous fluids and intravenous antibiotics. The colorectal surgeon group met consensus for the use of follow-up colonoscopy.

Selective antibiotic therapy

Forty-three colorectal surgeons and 7 general surgeons stated that they sometimes did not use antibiotics in the management of diverticular disease. There was no statistically significant difference between the two groups or between colorectal surgeons working in differing countries. This question included the option to provide a free-text response. Similar replies are summarised into Figure 2.

Anti-inflammatory medications

Thirty-three (34%) colorectal surgeons and 10 (58.8%) general surgeons responded that they have used anti-inflammatory agents in the management of diverticular disease of any kind. There was no

Table 2: Management of uncomplicated AD, responses from New Zealand surgeons only. A p-value <0.05 was considered to be significant.

	Median Likert Scale Score (% agreement of 1 or 2)		p-value
	New Zealand colorectal surgeons	General surgeons	
Bowel rest (NBM or clear fluids)	2 (57.1)	3 (41.1)	-
IV fluids	2 (61.9)	2 (64.7)	-
Oral antibiotics	3 (42.9)	3 (23.5)	-
IV antibiotics	2 (57.1)	2 (82.4)	-
Inpatient colonoscopy*	5 (0.0)	5 (0.0)	-
Follow-up colonoscopy	2 (71.4)	3 (17.6)	-
Follow-up CT colonography	5 (9.5)	2 (52.9)	-

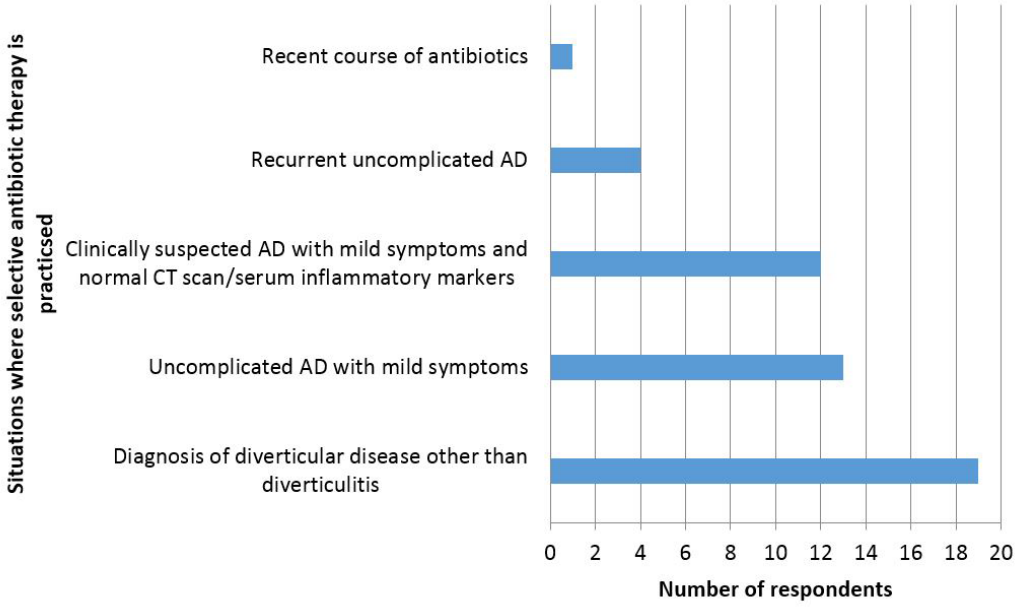
*Indicates that there was >80% agreement of 4 or 5

Table 3: Management of complicated AD, responses from New Zealand surgeons only. A p-value <0.05 was considered to be significant. Bold indicates positive consensus.

	Median Likert Scale Score (% agreement of 1 or 2)		p-value
	New Zealand colorectal surgeons	General surgeons	
Bowel rest (NBM or clear fluids)	**2 (85.7)**	1 (76.5)	-
IV fluids	**1 (95.2)**	1 (84.4)	0.001
Oral antibiotics	4 (20.0)	4 (12.5)	-
IV antibiotics	**1 (100)**	**1 (100)**	-
*Inpatient colonoscopy	5 (0.0)	5 (0.0)	-
Follow-up colonoscopy	**2 (81.0)**	**2 (41.2)**	0.001
Follow-up CT colonography	4 (14.3)	4 (43.75)	0.001

* Indicates that there was >80% agreement of 4 or 5

Figure 2: Rationale for selective antibiotic therapy.



statistically significant difference between country or specialty. Non-steroidal anti-inflammatory drugs (NSAIDs) were the most commonly named agents amongst the free-text responses (4 responses) and analgesia was the most frequently stated purpose for the use of anti-inflammatory agents (8 responses). Four surgeons had used an anti-inflammatory agent in the management of segmental colitis with associated diverticulosis (SCAD). Recurrent or refractory acute diverticulitis and symptomatic uncomplicated diverticular disease (SUDD) were both mentioned once.

A separate question enquired about the use of corticosteroids in any kind of diverticular disease. None of the respondents had used corticosteroids in this setting.

Discussion

This survey describes current practice and provides insight into the decision-making processes of clinicians who are managing patients with AD in Australasia.

Responses to this survey provided some information about the rationale for selecting inpatient care of patients with AD. Notably, serum markers of inflammation did not appear to weigh heavily on the decision to admit a patient. A minority of clinicians stated that age was an absolute indicator for admission, with a wide range of ages that were considered to be a reason to admit patients. Immunosupression in general—as well as diabetes, steroid therapy, transplant, and organ failure—were specified as comorbid conditions that were absolute indicators for hospital admission.

In our survey, there was little consensus regarding the management of uncomplicated AD. Routine use of antibiotics for patients with uncomplicated AD was still practised by a majority of respondents, and there was no consensus regarding this approach. This lack of consensus has also been reported internationally. A recent Delphi study demonstrated that, while there is expert consensus regarding the acceptability of outpatient management of patients with uncomplicated AD, there does not appear to be agreement regarding the important issue of selective antibiotic use in this patient group.[13]

Follow-up colonoscopy for patients with uncomplicated AD was practised 'most of the time' by both of the groups surveyed. This is an area of some contention, as several systematic reviews,[14-17] a retrospective study,[18] and one large epidemiological study,[19] have demonstrated that there are little data to support routine follow-up imaging in this patient group, other than as part of age-appropriate screening or in the management of patients with symptoms suggestive of an alternative diagnosis.

Responses to the focused question regarding the role of selective antibiotic therapy in diverticular disease showed that this approach was considered for non-inflammatory manifestations of the disease, as well as for mild AD. It would be interesting to observe whether these practices had changed or will proceed to change significantly over time. In the aforementioned international survey, a majority of respondents answered that there was a lack of high-level evidence to support the use of antibiotics in these patients,[13] a factor which is likely to explain—at least in part—why consensus is lacking.

The responses to the question regarding anti-inflammatory medication use reflect the uncertainties and new developments that have been made in this area. Anti-inflammatory agents are currently being considered for use in the management of select sub-types of DD. Mesalazine in particular, has been reported to be a helpful adjunct in the treatment of SUDD[20,21] and SCAD.[22,23] There is a small and as yet inconclusive amount of data suggesting that it may be of use in uncomplicated AD by reducing damage caused by inflammation and aiding earlier resolution of the inflammatory response and associated symptoms. To date, mesalazine has been shown to improve time to resolution of endoscopic and histologic evidence of inflammation following an episode of AD, and also reduce the rate of recurrence.[24,25]

The most significant limitation of this study was the sub-optimal response rate. This may be in part due to self-selection by clinicians who do not treat patients with DD and felt that the survey was not relevant to their clinical practice. The number of responses could have been increased by surveying all New Zealand general

surgeons, however, this was found to be logistically impractical due to the inability to gain access to all general surgeons, either from the college or through the District Health Boards. Despite these limitations, the results of this study are still useful for informing future local research into DD.

AD is a frequent indication for hospital admission under the general surgery service, and the patients who are affected make up a heterogeneous group, with variable disease severity. After taking this into account, there is still a striking lack of consensus regarding the approach to and management of AD, particularly the more common uncomplicated presentation. This lack of consensus may be explained by the paucity of high-level evidence in this group of patients. Expansion of the existing knowledge base and ability to utilise this new information in a cohesive, evidence-based approach to management will improve the efficiency and quality of care for patients presenting with this common condition.

Competing interests:
Rebekah Jaung reports grants from the Auckland Medical Research Foundation during the conduct of the study.

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URL:
www.nzma.org.nz/journal/read-the-journal/all-issues/2010-2019/2016/vol-129-no-1431-11-march-2016/6828

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