ORIGINAL ARTICLE

Caecal Diverticulitis - A Review of Eight Cases in Taiping, Malaysia

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Summary

Most patients presenting with acute right sided peritonitic pain are diagnosed and managed as acute appendicitis. In a series of 336 patients, eight were found to have caecal diverticulitis. The occurrence of such diverticula appears to be more frequent in Asian populations. The diagnosis can be established at operation on the basis of surgical findings. The aim of this retrospective review is to discuss the management of such patients when acute diverticulitis is found at the time of appendicectomy. It is advocated that management be conservative where possible, with appendicectomy and antibiotics. Where the possibility of a carcinoma remains, investigation after surgery by colonoscopy may be undertaken.

Key Words: Caecal diverticulitis, Appendicitis, Malaysia

Introduction

Diverticular disease of the right colon is not uncommon in Asian populations. Among Japanese these diverticula account for more than half of all colonic diverticula on barium enema examinations. Sugihara et. al[1] noted 429 (70%) of 615 patients with diverticular disease had their diverticula in the ascending colon and caecum. Narasaka et. al[2] reported that right sided diverticula accounted for 61 - 71% of diverticula in the Tohoku and Hiroshi Universities respectively. In Hawaii, Chang[3] found that while 95% of Caucasians who had diverticula had them in the descending colon, 62% of Japanese, in contrast, had the disease in the ascending colon.

Like diverticula in the left colon, caecal diverticula are subject to attacks of infection and inflammation. The clinical features of caecal diverticulitis, not unexpectedly closely resembles an attack of acute appendicitis. Usually a solitary diverticulum is inflamed, sometimes it even perforates and forms an abscess. Such cases of caecal diverticulitis are reported as uncommon in Western literature[4-6]. They are even mentioned as rare in some reports[7-11]. Nevertheless there has been a worldwide distribution of case reports and it has been reported in medical journals in at least 10 different languages.

It is among Asian populations, however, with the high incidence of right colon diverticulosis that the incidence of caecal diverticulitis is higher. While a centre in Germany may report 12 patients over 8 years[10], and one in New York report 12 over 15 years[6], Harada in Hawaii reported 90 cases in 12 years[12], 78% of whom were of Asian descent.

A different condition that appears to be truly rare is diverticulitis in a diverticulum of the transverse colon. Only one such case has been reported[13]. The patient was a 13 year old girl.

Materials and Methods

The medical records at the Taiping Medical Centre were reviewed. All patients who underwent surgery with a pre-operative provisional diagnosis of acute appendicitis between March 1993 and February 1998 were included.

Their notes were obtained from a computer database. Patients who had their appendix removed incidentally during a laparotomy were excluded.

Results

In the period studied, 336 patients underwent an appendicectomy for suspected appendicitis. The diagnosis was confirmed by operative findings in 257 (76%) of these cases. These include cases where the appendix was inflamed as well as where it was perforated, where an abscess had formed, a case where an ascaris had caused the inflammation and a case where an incidental carcinoma of the sigmoid colon was found. In a further 48(14%) patients, the appendix was not inflamed and other visible pathology was found at surgery. In the remaining 31(9%) surgery revealed a wide variety of conditions (Table I). In 8 of these cases there was an inflamed mass in the caecum, associated with diverticula. In one 85 year old woman a caecal mass was noted but she had concurrent tumour in the porta hepatis. She developed jaundice and died within one month. Histological confirmation was not obtained but her probable diagnosis was a caecal carcinoma with metastases.

Table II summarises the case histories of these patients. There were 4 men and 4 women, aged between 30 and 56 years, with a mean age of 44.8 years. In all these cases the diagnosis was made at operation, and an appendicectomy was performed. In addition one patient had a faecolith removed and the diverticulum excised. All the patients were treated with antibiotics, most with ampicillin with clavulanic acid. After a follow-up period ranging from 21 to 52 months (mean=34 months) all 8 patients are well with no further recurrent or related disease. One patient developed acute intestinal

Table I

Diagnoses besides appendicitis found at appendicectomy

Diagnoses	Number
Caecal Diverticulitis	8
Mesenteric Adenitis	4
Primary Peritonitis	2
Adhesions	1
Acute Pancreatitis	1
Carcinoma of Caecum with Metasteses	1
Cholecystitis	1
Epididymo-orchitis	1
Omentum Sealed Perforated Duodenal Ulcer	1
Terminal Ileitis	1
Ureteric Stone	1
Cystitis	1
(Gynaecologic)	(8)
Ovarian Germ-cell Tumour	1
Twisted Ovarian Cyst	1
Ruptured Ovarian Cyst	1
Ectopic Pregnancy	4
Tubo-ovarian Mass	1

Table II
Case Summaries of Patients with Caecal Diverticulitis

Date	Age	Race	Sex	Duration of Pain	Site of Diverticulum	Complications
8/94	50	C	F	2 days	post-lateral wall	
3/95	53	C	M	3 days	posterior wall	post-op bowel obstruction
8/95	44	C	M	7 days	posterior wall	
11/95	30	C	F	2 days	base of appendix	
7/96	46	C	F	3 days	lateral wall	perforation found
11/96	43	I	M	2 days	lateral wall	omentum adherent
12/96	56	I	F	5 days	lateal wall	
3/97	36	M	M	3 days	ant-medial wall	faecolith found

obstruction post-operatively and was maintained on a prolonged period of nasogastric drainage and intravenous fluids. He was discharged from hospital only after eleven days.

Discussion

Pathophysiology

There are at least two types of right colon diverticula. Some appear to be congenital in origin. These are solitary and true diverticula containing all layers of the bowel wall[4,5,7,14]. Suhihara et.al[1] found that 31% of patients with right sided diverticular disease had a solitary diverticulum. However in most patients, especially among Asians the diverticula are multiple and are similar in morphology to left sided diverticulosis containing only mucosa and serosa. Studies have noted that they are more frequently seen with increasing age up to a peak in the fifth decade[1,2]. Both the congenital and acquired pulsion types of diverticuli are probably suspectible to acute diverticulitis like diverticula that occur in the left colon.

Cecal diverticula probably become acutely inflamed due to the similar factors that give rise to acute appendicitis and left colon diverticulitis. The signs and symptoms are indistinguishable from acute appendicitis[3-12,14-16]. Presumably sometimes the inflammation may resolve by the body's own natural defences. On the other hand, complications have been noted. Perforation and abscess formation may occur[5,7,9]. The condition can cause massive haemorrhage[17]. It may be associated with a carcinoma[18].

Clinical Features

The patient involved is usually an adult. The mean age 44.8 years observed in this series closely corresponds to a number of other reports[6,19] including that of Harada and Whelan[12] of 90 patients where the mean age was 41.7 years. Norfray[15] however noted that in a few large series, a quarter to half of these patients may be under 30 years of age. In this series the duration of pain ranged from 2 to 7 days. Caecal diverticulitis was the commonest diagnosis other than appendicitis in this series of appendicectomy operations. It occured in a ratio of 1:32 cases of appendicitis. Fisher[6], in New York, however noted caecal diverticulitis in 1:120 cases of appendictis.

Operative Diagnosis and Management

The pre-operative diagnosis in all cases in this series was appendicitis. No pre-operative imaging investigations were performed. At surgery the inflamed mass was found along the appendices epiploicae beside either of the taenia coli. A solitary diverticulum was involved in every case, which appears to be a common experience[4-9,14,16,20,21]. On discovery by the palpating finger the mass feels like an inflamed appendix which is edematous and adherent at the cecum. The surgical dictum that adequate exposure is a requisite for good surgery is especially true

in this condition. It is important that the incision is large enough for the cecum to be mobilised and delivered into the wound. Only then can its nature be confirmed. In one case the omentum had formed organised adhesions to the mass, evidence that there had been previous inflammation. Only when the omentum was dissected free was it appreciated that the appendix was not in the mass. Tracing the tenia coli to the base of the appendix was useful in locating the appendix in several instances.

Despite its inflammatory appearance the mass may look suspiciously like a carcinoma[4-7,9,14]. Palpation of the mucosal surface of the mass can aid in diagnosis. Choosing an opposite caecal wall that is soft and pliable to place against the mass, using a gentle pinch grip and rolling the index finger, the surgeon can slide the mucostal surfaces on each wall over each other. Through the opposite caecal wall it is possible to appreciate a crater or depression on the mucostal surface of the mass corresponding to the mouth of the diverticulum[6]. A carcinoma would present a protruding mass on the mucosal surface. In addition the diagnosis can be supported by demonstrating the presence of other diverticuli. Often these are palpable with fecal plugs in them. They are usually found in the fatty appendices epiploicae.

Although the differential diagnosis of greatest concern is no doubt a caecal carcinoma there are other possibilities. These include, actinomycosis, tuberculosis, a granulomatous tumour from a foreign body[16], and in a few tropical countries such as Sri Lanka and Nigeria intussussception occurs fairly often in adults, due to amoebic granulomatous formulation in the cecum[22].

In view of these possibilities could pre-operative management be changed? It has been shown that a barium enema and colonoscopy can help make the diagnosis pre-operatively[2,14,15,23], although a barium enema may not be able to distinguish caecal diverticulitis from a tumour[8]. It has also been claimed that computed tomography is a useful imaging tool[19]. Regional thickening of the colonic wall, an extraluminal mass, haziness and linear strands in pericolic fat, or contrast-filled structures may suggest diverticulia. The sonographic findings of caecal diverticulitis have also been described by Wada, Kikuchi and Doi in a series of 18 patients[24]. These include a hypoechoic round focus protruding from a segmentally thickened colonic wall. A preoperative diagnosis may allow medical treatment to be instituted and an operation avoided. However, a randomised trial to determined whether medical or surgical treatment is better is not available and not easy to perform. In most clinical settings all these investigations would not be practical for all cases of suspected acute appendicitis. Most of the times such cases are misdiagnosed preoperatively as appendicitis. In such a situation caecal diverticulitis will be a diagnosis made at operation and the choice will be either performing a right hemicolectomy, an ileocaecal resection, a diverticulectomy or just an appendicectomy followed by antibiotics to treat the infection.

As this condition is not malignant and does not frequently recur, surgical resection is not necessary, provided the surgeon can be certain of the diagnosis. However, in many instances right hemicolectomies have been performed because the presence of a malignancy was suspected[4,7,8,12]. Such resections are sometimes also necessary because of complications like perforations and haemorrhage. Right hemicolectomy and ileocaecal resections have also been advocated as the clinically prudent option to avoid missing a malignancy, preventing recurrent attacks and complications of caecal diverticulitis, and even for preventing confusion at later barium studies[4,7,8]. Opinions will still differ in the absence of data from a large enough series with long enough follow up to prove whether radicals surgery or conservatism produces a more favourable outcome when a surgeon faces an inflamed caecum at surgery. However, many authors, especially those with a larger series advocate a conservative approach. Some advocate a diverticulectomy[20,21,25] others advocate appendicectomy only and antibiotic therapy[1,6,12,14,16,23]. Others advocate no surgery if the diagnosis can be made pre-operatively[6,26].

Conclusion

Macroscopic features of caecal diverticulitis at surgery allow the diagnosis of the condition to be made intra-operatively with confidence. An appendicectomy might as well be performed in such cases as it does not entail any morbidity. Knowledge of the condition and ability to recognise it at surgery is, I believe, more important

than applying a battery of investigations. After surgery further imaging especially by colonoscopy in order to biopsy any mucosal lesions is the best option should any doubt remain. The delay diagnosis of a few days would not be detrimental to the patient in any significant way. Significantly, the only deaths reported in the literature resulting from the disease have been in patients who underwent right hemicolectomy[6].

References

1. Sugihara K, Muto T, Morioka Y, Asano A: Yamamoto T. Diverticular disease of the colon in Japan. A review of 615 cases. Dis Colon Rectum 1984; 27: 531-7.
2. Narasaka T, Watanabe H, Yamagata S, Munakata A and Tajima T. Statistical analysis of diverticulosis of the colon. Tohonku J Exp Med 1975; 115: 271-5.
3. Chang WY. Colonic diverticulitis in Hawaii. Hawaii MJ 1965; 24: 442.
4. Leslie DR. Solitary diverticulum of the caecal area. Med J Aust 1984; 141: 531-2.
5. Magness LJ; Sanfelippo PM; van Heerden JA; Judd ES. Diverticular disease of the right colon. Surg Gynecol Obset 1975; 140: 30-2.
6. Fisher MG, Farkas AM. Diverticulitis of the caecum and ascending colon. Dis Colon Rectum* 1984 27: 454-8.
7. Peltokallio P, Tykka H, Myllarniemi H. Solitary diverticulum of the caecum and its complications. Ann Chir Gynaecol Suppl 1977; 66: 230-3.
8. Villalba CR, Zarogoza FC, Villalba CS et. al. Diverticulite aigue solitaire du caecum une cause d'abdomen aigu. A propos de 9 cas et revue de la litterature. J Chir (Paris) 1995; 132: 299-304.
9. Mandarano R, Ciccone A, Sereni P, Venturin N. Diverticolite acuta del cieco. Minerva Chir 1994; 49: 597-601.
10. Morchel M, Becker H. Diagnose und Therapie der Zonkumdivertikulitis. Zentralbl Chir 1993; 118: 81-3.
11. Dorfman S, Barboza R, Finol F, Cardoza J. Diverticulo unico de ciego perforado. Reporte de cinco casos. Rev Esp Enferm Dig 1990; 77: 147-8.
12. Harada RN, Whelan TJ Jr. Surgical management of caecal diverticulitis. Am J Surg 1993; 166: 666-71.
13. Wilkinson S. Acute solitary diverticulitis of the transverse colon in a child. Report of a case. Dis Colon Rectum 1988; 31: 574-6.
14. Langdon A. Solitary diverticulitis of the right colon. Can J Surg 1982; 25: 579-81.
15. Norfray JF, Givens JD, Sparberg MS, Dwyer RM. Caecal diverticulitis in young patients. Gastrointest Radiol 1980; 5: 379-82.
16. Timmermans LG, Vielle G and Dewulf E. Simulation of appendicitis by tumor-like lesion of cecum. Acta Chir Belg 1992; 92: 191-5.
17. Maier WP, Sherwin GP, Rosemond GP. Diverticulitis of the caecum with chronic penetration and massive hemorrhage. Am J Surg 1968; 116: 463-6.
18. Tolley JA. Chronic diverticulitis with perforation and associated carcinoma of the cecum. Dis Colon Rectum 1967; 10: 389-93.
19. Crist DW, Fishman EK, Scatarige JC and Cameron JL. Acute diverticulitis of the cecum and ascending colon diagnosed by computed tomography. Surg Gynecol Obset 1988; 166: 99-102.
20. Rasmussen I and Enbald P. Acute solitary diverticulitis of the caecum. Case report. Acta Chir Scand 1988; 154: 399-401.
21. Schuler JG, Bayley J. Diverticulitis of the cecum. Surg Gynecol Obset 1983; 156: 743-8.
22. Rassaretnam R; Kumarakulasinghe CB and Eaton KL. Tropical intussusception in adults. Aust N Z J Surg 1976; 46: 57-63.
23. Sicard JL, Flabeau F. Les Tumeurs inflammatories du caecum. J Chir (Paris) 1975; 109: 5-22.
24. Wada M; KikuchiY and Doi M. Uncomplicated acute diverticulitis of the cerum and ascending colon: sonographic findings in 18 patients. AJR Am J Roentegol 1990; 155: 283-7.
25. Kaufman Z; shpitz B; Reina A and Dinbar A. cecal diverticulitis presented as cecal tumour. Am Surg 1990; 56: 675-7.
26. el Nakadi B; Greuse M; el Nakadi I. Diverticulite solitaire du cecum: a propos de 2 cas. Acta Chir Belg 1990; 90: 231-3