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Colonoscopy in the very elderly is safe and worthwhile

SIR—Colonoscopy is a commonly performed, invasive procedure that allows direct visualisation of the mucosal surface and serves as a therapeutic tool. Colonoscopy is generally well tolerated, but complications are recognised [1, 2]. Advancing age is commonly assumed to be an independent risk factor [3, 4] and hence accounts for the reluctance of some physicians to use colonoscopy to evaluate patients beyond 80 years of age.

We reviewed our colonoscopy experience in the very elderly (80 years of age or over) over a 6-year period.

Patients and methods

A total of 3,106 colonoscopies were performed in our unit between September 1996 and July 2002. Both inpatients and outpatients were included. Of these procedures, 247 (8%) were performed on 225 patients aged 80 years or over. The majority within this subset were women (male:female = 96:129) and the mean age was 83.4 years (range 80–93.5 years).

Colonoscopy was performed using Olympus colonoscopes (CF 240 AL and CF 200 HL, KeyMed Ltd, Southend-on-Sea, UK). Oxygen was delivered using nasal cannulae and oxygen saturation monitored with finger oximeters.

Endoscopic data were collected prospectively and stored in a computer database (Endoscribe). Data were exported to Microsoft Excel 97 spreadsheet software for further analysis.

Results

The main indication for colonoscopy was anaemia (Table 1). Other indications included a change in bowel habit, haematochezia, abnormal barium enemas and cancer surveillance. Bowel preparation was as per our unit's standard protocol. Two sachets of Picolax were used in the majority (137/247 patients), with light diet 2 days before the procedure and clear fluids 1 day before. Other forms of preparation included the use of Fleet, Kleen Prep and Phosphate enemas. The quality of bowel preparation was assessed by the performing endoscopists and classified into good (117/247; 47.4%), satisfactory (54/247, 21.9%) and poor (64/247, 25.9%). In the remaining 12 (4.8%), the quality of bowel preparation was not stated.

Sedation was utilised in 225/247 procedures. The majority had a combination of midazolam (median midazolam 4.0 mg; range 1–8) and an opiate (138/247). Midazolam alone was used in 75/247 (median 5 mg; range 1–12) while 12/247 had opiates alone. The opiates used were pethidine, fentanyl and pentazacine. Buscopan was given as requested by the colonoscopist. Colonoscopy was well tolerated in 198/247 (80.2%) patients. In eight, the procedure was poorly tolerated. The degree of patient tolerance was not documented in 41 cases.

The completion of colonoscopy was defined as reaching the caecum or (neo-) terminal ileum. The caecum was identified using fixed landmarks such as the ileocaecal valve, appendix orifice or the tri-radiate fold. In our series, the completion was achieved in 56% (139/247). In eight cases, the presence of an obstructing lesion prevented completion. In the remainder, inadequate bowel preparation, looping and patient intolerance precluded complete bowel examination. Interestingly, 22 patients who did not receive any sedation had a complete colonoscopy and tolerated the procedure well.

Table 1. Indications for colonoscopy

		Major findings	
Indication	*n*	Cancer	Polyp
Anaemia	59	9	8
Haematochezia	39	5	6
Diarrhoea or constipation	37	4	6
Polyp surveillance	32	1	15
Cancer surgery follow-up	51	1	16
IBD surveillance and assessment	9	0	2
Abnormal barium enema	26	5	8
Acute large bowel obstruction	3	1	0
Other indication	25	3	4

Other indications include: weight loss, metastasis of unknown origin, family history, sigmoid volvulus, abdominal mass, abdominal pain, bleeding into colostomy bag and unknown.

n = number of indications.

NB. Some patients have multiple indications.

Colonoscopy findings are shown in Appendix 1 (available as supplementary data on the journal website www.age-ing.oxfordjournals.org). Diverticular disease was demonstrated in the majority. Thirty patients had more than one finding. The overall carcinoma rate was 10.1% (25 carcinomas in 247 procedures or 11% of patients). Eleven of these 25 patients underwent surgery. At the time of colonoscopy, therapeutic procedures were also undertaken. These included polypectomies, argon plasma coagulation and metallic stent placement (Appendix 2, available as supplementary data).

Only one serious complication occurred. This was a perforation of the sigmoid colon in a 92-year-old patient. This patient underwent emergency laparotomy, but subsequently died. There was no case of significant haemorrhage.

Discussion

Colonoscopy is generally viewed as the gold standard method of diagnosing colorectal cancer [5]. Compared with double contrast barium enema with flexible sigmoidoscopy, colonoscopy was shown to be more sensitive for adenoma and carcinoma, and had a greater positive predictive value [6]. Computed tomography colonography (virtual colonoscopy) is an emerging technique that challenges conventional colonoscopy [7, 8]. However, despite its high specificity, the range of reported sensitivities remains wide [9, 10]. It is poor in detecting flat polyps and polyps smaller than 5 mm [9, 11–13] and lacks a therapeutic arm. In a UK survey, only about a third of radiology departments offered regular virtual colonoscopy service, with limited scanner capacity hindering wider usage [14]. With its therapeutic facility, conventional colonoscopy is currently the tool of choice in investigating lower gastrointestinal (GI) symptoms.

The 2001 census confirmed that over 4% of the UK population or 5% of adults (over 16 years) are at least 80 years of age [15]. With advancing age, there is an increasing incidence of colorectal neoplasia [16]. In theory, colonoscopy should therefore be a commonly requested investigation in the over-80s. Unfortunately, many doctors remain hesitant when requesting colonoscopy in this cohort because of perceived risks. This reluctance is confirmed by our study, where only 8% of all colonoscopies were performed in the over-80s. The risks of colonoscopy are generally associated with the bowel preparation, sedation and the procedure itself. Early reports suggested that the risks are increased with advancing age [3, 4, 17], but recent studies have shown otherwise, with no reported mortality [18–21].

Bowel preparation was generally well tolerated in our cohort and in 22 procedures sedation was not used. A recent prospective study suggested that male gender, increasing age and the absence of perceived pain were factors associated with a patient's willingness to undergo colonoscopy without sedation [22]. In our study, there were no complications directly related to sedation. Unlike younger patients (less than 80 years of age), the physical state of older patients needs to be carefully assessed, as they commonly have co-morbidities such as renal impairment, diabetes and respiratory diseases [2, 23].

Completion rates of colonoscopy are variable, but have been shown to be generally lower in the very elderly compared with a younger cohort [18, 19, 24]. A recent retrospective study, however, demonstrated similar completion rates in various age groups [25]. In our series, a complete colonoscopy was achieved in only 56%. This figure is similar to that found in a recent prospective study of colonoscopy (for all age groups) in the UK [26]. Poor bowel preparation, intolerance of the procedure and looping of the colonoscope are factors responsible for the low completion rate. With the development of digital subtraction bowel cleansing and better scanners [27], virtual colonoscopy is likely to play a greater role in patients with incomplete conventional colonoscopy.

Nearly 80% of our patients had abnormal findings at colonoscopy. Many of these abnormal findings (particularly diverticular disease) were not clinically important. However, 11% of these patients (25/225) were diagnosed with colonic cancer and a further 25% (56/225) had polyps. Half of the patients diagnosed with cancer went on to have surgery. Patients presenting with anaemia or haematochezia were more likely to have an underlying cancer or polyp. There was one serious complication in 247 procedures (0.4%). These figures are comparable with other published series (Table 2) [18–21, 24, 28, 29]. Diagnostic and therapeutic procedures were performed without any complication. A developing therapy is the placement of colonic metallic stents [30]. We placed these stents as a form of final palliation in two patients with inoperable colonic cancer.

Our experience demonstrates that with careful consideration for co-morbidities, colonoscopy can be safely performed in the very elderly. Although the completion rate for colonoscopy is relatively low, the diagnostic yield is high and there is potential for therapy. We believe that colonoscopy should be the investigation of choice in the elderly with lower bowel symptoms.

Key points

- Over 4% of the UK population is over 80 years of age.
- Conventional colonoscopy (CC) can be safely performed in patients in this age group.
- CC completion rate in this cohort is relatively low, but the diagnostic yield is high—over 10% of the patients in this study had colorectal cancer.
- CC has a potential for therapy such colonic stent placement.

Conflict of interest

None.

Source of funding

Table 2. A comparison with other studies

	No. of procedures/ no. of patients	Age (years)	Completion rate (%)	Cancer (%)	Benign adenomas and/or polyps (%)	Normal (%)	Serious complication
Bat 1992	NS/436	>80	63[a]	14	29.8	24.7	0.7% (2 bleeds, 1 perforation)
Ure 1995	NS/354	>70	78	6	24	26	2% (4 bleeds, 3 arrest, 0 perforation)
Sardinha 1999	428/403	>80	94	4.5	63	NS	0.2% (1 bleed)
Perry 2000	521/413	>80	96.5	7.1	43.6	44.9[b]	0.4% (1 bleed, 1 perforation)
Clarke 2001	NS/95	>85	NS	12.7	22.5	43.7	1% (1 perforation)
Present study	247/225	>80	56	10.1[c] (25/247)	22.7[c] (56/247)	28.3 (70/247)	0.4% (1 perforation)

%: Percentages were based on the total number of procedures performed (where available).

[a]Completion rate on the initial attempt; a second colonoscopy was performed, with an overall completion rate of 88%.

[b]Includes diverticular disease.

[c]11% of patients had cancer and 25% had polyps.

NS: not stated.

WING-KIN SYN[1], URMILA TANDON[2],
MOHAMMED MONZUR AHMED[1]*
[1]Department of Gastroenterology,
[2]Department of Geriatric Medicine, Good Hope Hospital,
Sutton Coldfield, Birmingham B75 7RR, UK
Fax: (+44) 121 378 6095. Email: monz@doctors.org.uk
*To whom correspondence should be addressed

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Outcomes of safe, simple colonoscopy in older adults

SIR—Colonoscopy is a simple procedure that can be performed in patients of all ages [1]. However, diagnosis can be technically challenging since not all patients are able to ingest the large quantities of laxative preparations (e.g. polyethylene glycol preparations (PEG) or oral phosphosoda) required to cleanse the colon adequately. This problem is not solely endoscopic but also general, in view of recently reported cases of electrolyte imbalance [2, 3]. In addition, procedure management demands considerable nursing resources, particularly if patients have to be forced to ingest all the preparation required to clean out the bowel thoroughly [4]. Colonoscopy may also cause pain (looping of the colon and insufflation of air in the bowel) and thus be poorly tolerated.

Poor bowel preparation and intolerance of the procedure are the cause of failure in 10–43% of colonoscopies [5]. The incidence of these problems is particularly marked in certain categories of patients, such as the severely compromised [6] or older adults [7], and any adverse effects of the procedure may seriously influence the subsequent clinical course.

Various sedation techniques have been proposed to enhance tolerability. However, a recent review has shown that the use of midazolam is correlated with increased rates of oxygen desaturation and hypotension, while depression of the S-T segment develops in 7% of elderly patients admitted to colonoscopy, regardless of sedation with midazolam or placebo [8, 9]. The focus of the debate is now on the individualised use of sedative agents [10]; account is taken of patient preference [11] and the efficiency of resource allocation, considering that an anaesthetist must be present if the endoscopist or endoscopy nurses are not sufficiently trained [12, 13].

At present, careful preparation and the use of sedation have become the standards by which to optimise colonoscopy in every type of patient. However, in a quality standards review on colonoscopy, Rex [14] questioned whether high-performance procedures with complex organisational aspects had different outcomes from ones conducted 'more economically'. One cost-saving approach is to carry out colonoscopy without sedatives and without forcing older patients to prepare for the procedure (e.g. by introducing naso-gastric tubes) and then interrupting it if the patient experiences too much discomfort [15]. We present the results achieved by applying this approach in our endoscopy unit operating as an open service within a geriatric hospital.

Materials and methods

We consider the outcomes, from 1996 to 2000, of an endoscopy service operating in a geriatric hospital as an open access service for inpatients and outpatients of all ages. Drugs were never administered during colonoscopy (which was performed by four different qualified endoscopists, with varying lengths of service, operating independently, at different, non-simultaneous weekly access times) and the procedure was interrupted if it caused the patient too much discomfort. All patients were prepared for the examination by spontaneous assumption of a maximum of 4 litres of PEG (the only saline solution used by us). The results were assessed by age and by the following geriatric age groups: 65–74 years (young-old), 75–84 years (old) and over 85 years (old-old). Details on the variables considered and statistical analysis are given in Appendix 1, available as supplementary data on the journal website (www.ageing.oxfordjournals.org).

Results

During the test period 2,014 colonoscopies were conducted in patients of between 16 and 97 years of age. Of the patients, 976 (434 males) were aged over 65 years (148 over-85s). Characteristics of test patients and indications for the procedure are listed in Table 1. Four patients were admitted to hospital for observation due to post-polypectomy haemorrhaging and two owing to a vagal attack. Colonoscopy was completed in a total of 1,609 subjects (79.9% of cases). Incomplete colonoscopy in 177 patients (43%) resulted from poor bowel preparation and, in the remaining 228 cases, from failure to tolerate the procedure because of excessive discomfort.

As regards age, colonoscopy was unsuccessful in 12.2% of young and 28.5% of older patients (28.3% and 50.7% owing to poor preparation, respectively).

Considering the three geriatric subgroups, procedures were not completed in 97 (20.6%) young-old patients, in 117 (32.9%) old patients and in 64 (43.2%) old-olds (37.1, 54.7 and 64.1% due to poor bowel preparation, respectively), with a statistically significant distribution for failed procedures and insufficient cleansing, which increased with age (χ^2 for trend = 33,672; $P < 0.0001$).

Colorectal cancer was diagnosed in 108 patients (88 aged over 65 years, 15 of whom (10.1%) were old-old). There was no significant distribution for diagnosis of polyposis, although the young-old patients presented the majority of single or multiple polyps (102 in this age group). Table 2 shows the distribution of the other diagnoses.

Logistic regression analysis was based on 11 factors drawn from clinical and personal data and from indications for the procedure.

Limiting analysis to the geriatric population, the procedure was at higher risk of failure when the patient was female (OR 1.61, 95% CI 1.18–2.19, $P = 0.0029$), an inpatient