

**EFFECTIVE HEALTH CARE
THE MANAGEMENT OF COLORECTAL CANCERS**

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Introduction

Colorectal (bowel) cancer is the second most common cancer in England and Wales in terms of both incidence and mortality. Over 30,000 new cases are diagnosed each year; of these about half will have colorectal cancer registered as the underlying cause of death.

Early detection improves outcome, but is difficult as the most common presenting symptoms of colorectal cancer – change in bowel habit, rectal bleeding, abdominal pain and anaemia – are vague, frequently occur and can have a wide variety of causes.

Prognosis for patients depends on the spread of the cancer at diagnosis (Table 1). Approximately 55% of patients in England and Wales present with advanced colorectal cancer (Stage III or IV; Dukes C or D), so even where surgical removal of the primary tumour is an option, accurate staging is essential for appropriate choice of treatment. Survival rates vary between English health authorities, but the average is now around 45% at five years after diagnosis, and most of those who live this long are cured.

This article is based on a recent issue of *Effective Health Care* on the research evidence for the management of colorectal cancers and focuses on the aspects most relevant to radiographers.¹ *Effective Health Care* summarises a series of systematic reviews, carried out by the Centre for Reviews and Dissemination, to inform the update of the 1997 service guidance for colorectal cancer. Full details are provided in *Improving Outcomes in Colorectal Cancers – The Manual Update*² and *The Research Evidence for the Manual Update* published by the National Institute for Clinical Excellence (NICE).³

Access to services

NHS referral guidance for colorectal cancer was introduced in July 2000, requiring patients who were suspected by their GP of having cancer to be seen by a specialist in secondary care within two weeks of their being referred. The evidence is limited, but wide variations exist between services provided.

The CHI/Audit Commission report found that 18% of patients found to have colorectal cancer were referred as 'not urgent', when adherence to national guidelines should have led to urgent referral. This study also found that at least half of those referred as urgent cases did not fit the criteria. Between 1.7% and 14% of patients referred through fast-track services described in the evidence review were found to have cancer.

Delays associated with inadequate assessment of iron-deficiency anaemia are an issue because anaemia may be the only symptom of colon cancer. It appears that the majority of patients with anaemia of unknown cause are not referred for the relevant investigations.

Diagnosis

In cases of suspected colorectal cancer, there are two main types of investigation: endoscopy (including flexible sigmoidoscopy or colonoscopy) and imaging (barium enema and CT colonography). Each method has specific advantages and disadvantages that make it more or less appropriate for particular patients. Choice of diagnostic method should depend on the patient's symptoms, age, family history, other risk factors such as colitis or Crohn's disease, as well as their general condition and ability to tolerate any preparation and the test itself. The local availability of facilities, equipment and skilled staff will inevitably influence the choice of investigation used.

Endoscopy has the advantage of permitting biopsy and histopathological assessment of any suspicious lesion and removal of polyps. Flexible sigmoidoscopy is the most appropriate initial investigation for the majority of patients with symptoms that suggest possible lesions in the descending colon, sigmoid or rectum. There is evidence to suggest that for patients who present with symptoms alone (usually rectal bleeding, changed bowel habit or pain), further investigation after a negative flexible sigmoidoscopy is rarely necessary.

Diagnostic colonoscopy is usually appropriate for patients with right-sided symptoms, except for those with palpable masses, for whom imaging (barium enema or CT) is likely to be more suitable. If a complete colonoscopy is not achieved and clinical doubt remains, imaging is necessary.

The reliable diagnosis of colon cancer by colonoscopy requires a skilled colonoscopist who can achieve a high rate of completion. Traditionally, endoscopy has been carried out by hospital doctors. However, there is growing evidence that both flexible sigmoidoscopy and diagnostic colonoscopy can be carried out safely by appropriately trained nurses and GPs.

Barium enema is well established in the NHS and staff are experienced in its use. A systematic review of studies of the accuracy of double contrast barium enema and colonoscopy found that colonoscopy is significantly more sensitive than barium enema for the detection of both colorectal cancer and polyps, but barium enema is associated with a much lower risk of complications. A large retrospective study from a UK teaching hospital came to similar conclusions.

CT colonography (also known as 'virtual colonoscopy') is a relatively new diagnostic technology requiring expertise in its use. A systematic review of studies comparing CT colonography with colonoscopy, found that CT colonography was capable of correctly identifying most polyps over 10 mm in size.

Pre-operative staging of liver

A number of imaging techniques are available to identify liver metastases – ultrasound (US), CT scanning, and Magnetic Resonance Imaging (MRI).

Studies of the diagnostic accuracy of pre-operative liver imaging suggest that overall, CT is slightly better than US. However, there have been few direct

comparisons between CT and US in this situation, and the studies that were identified have serious methodological flaws. In general where abdominal US identifies a metastases, it is likely to be accurate, but up to half of patients with negative US scans do in fact have cancer in the liver.

One study (n=73) reported sensitivity figures for contrast-enhanced CT of 94% with a specificity of 92%. However a smaller study (n=44) reported a much lower figure for the sensitivity of CT: 37.5% with a specificity of 97%.

Local staging of rectal cancer

MRI appears to be better than CT in locally staging primary rectal cancer. A systematic review found that MRI was superior to CT for the assessment of bowel wall penetration and the identification of metastatic lymph nodes. Of several primary studies not included in the systematic review only one compared imaging techniques directly, the others used histopathology findings alone as a reference standard. These studies found that MRI using a body coil or endorectal coil was superior to CT for correctly staging rectal cancer. For the assessment of metastatic lymph nodes, MRI using the body coil was found to be superior to CT.

Good quality, comparative research studies are required, particularly as the technology used in these studies may now be considered out-of-date.

Rectal endosonography and endoscopic ultrasonography are used to demonstrate the extent of tumour invasion into the layers of the muscle wall. A systematic review found a sensitivity of 93% and specificity of 81% for rectal endosonography or endoscopic ultrasonography for differentiating benign tumours and early rectal cancers. Other primary studies have reported levels of sensitivity varying from 0% to 100%, and specificity from 80% to 98%.

The systematic review also found that when compared with CT and MRI, rectal endosonography was the most accurate way of assessing tumour penetration. However, CT and MRI provide more staging information and are more widely available.

Stents

Colorectal stents may be used to provide temporary relief of acute intestinal obstruction so that emergency surgery can be avoided. The use of a stent can avoid the need for a stoma. Expanding metal stents usually remain effective for more than a year, and in many cases, can provide good palliation until death.

Radiotherapy in primary disease

Comparison between radiotherapy combined with blunt dissection surgery with surgery alone for rectal cancer, shows that the addition of radiotherapy significantly reduces local recurrence rates. Pre-operative radiotherapy at a biological equivalent dose (BED) $\geq 30\text{Gy}$, produces a greater proportional reduction in local recurrence when compared to no radiotherapy, than post-operative radiotherapy (57% and 37% respectively). Pre-operative radiotherapy also leads to a significant reduction in mortality rates among patients who receive a BED of 30Gy or more.

Modern treatment methods, using megavoltage equipment with a planned volume technique to deliver radiotherapy to smaller volumes of tissue, reduce the toxicity of treatment. However, even this form of radiotherapy is likely to cause long-term problems with bowel function.

Radiotherapy given before Total Mesorectal Excision (TME) reduces local recurrence, from 8.2% to 2.4% ($p < 0.001$), but no reduction in mortality has been shown at a median of two years after surgery. Two randomised controlled trials (RCTs) currently in progress are expected to throw further light on the issue of whether radiotherapy is worthwhile for patients who undergo TME.

Anal cancer

Anal cancer is a rare disease and all patients should be referred to multidisciplinary anal cancer teams to optimise their outcomes.

Two large RCTs comparing radiotherapy (RT) alone with chemoradiotherapy (CRT) have demonstrated a highly statistically significant reduction in local failure. Both saw improvements in colostomy-free survival and reduction in deaths from anal cancer with CRT. Neither showed any significant effect on overall survival. A third RCT tested the benefit of adding mitomycin C to 5-fluorouracil (5FU) and radiotherapy. This also demonstrated statistically significant improvements in colostomy-free and disease-free survival. The National Cancer Research Network is currently conducting a trial comparing CRT schedules (ACT2).

Follow-up

The results of two recently conducted systematic reviews showed that intensive follow-up that includes liver imaging was associated with a decrease in mortality owing to any cause. However, it was not clear which elements of the intensive follow-up programme were important.

There is some evidence to suggest that CT scanning as part of a routine follow-up programme may be useful.

One RCT demonstrated that follow-up is efficient and cost-effective if patients at higher risk are followed up more intensively than those at lower risk. Patients at greatest risk are those with more advanced tumours at the time of resection – particularly Stage III cancers.

Treatment of recurrent and advanced disease

Two meta-analyses demonstrate significantly lower mortality rates with palliative chemotherapy for patients with metastatic colorectal cancer. In four studies, quality of life was found to be either similar or better in patients who received chemotherapy than in those who did not.

Chemotherapy given early in the course of metastatic disease produces better outcomes than chemotherapy given after symptoms have become severe,

increasing survival by 3-6 months without increasing adverse effects on quality of life.

External radiotherapy used alone eases pain in a high proportion of patients with locally advanced rectal cancer. In some patients, tumours have gone into complete remission or regressed sufficiently to permit curative surgery after prolonged fractionated radiotherapy of 45 to 50Gy.

Summary

Early detection allows for the best chance of cure; accurate staging allows for appropriate treatment. The best treatment, given at the right time and by the appropriate professionals, can provide a significant hope of cure to those with colorectal cancer.

Table 1 TNM and Dukes' classifications ⁴

TNM Classification (American Joint Commission on Cancer)			Dukes' Classification	
Stages	T	N	M	Stages
Stage 0	Tis	N0	M0	
Stage I	T1	N0	M0	A
	T2	N0	M0	B1
Stage II	T3	N0	M0	B2
	T4	N0	M0	B2
Stage III	T1, T2	N1 or N2	M0	C1
	T3, T4	N1 or N2	M0	C2
Stage IV	Any T	Any N	M1	D

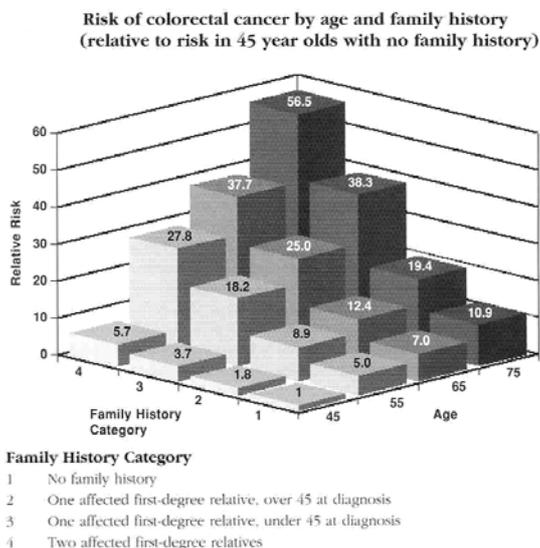


Fig.1 Close relatives of people diagnosed with colorectal cancer are at increased risk. The risk is greater the larger the number of relatives affected, the closer the family relationship, and the younger they are at the time of diagnosis. This chart demonstrates risk of colorectal cancer by age and family history (relative to risk in 45 year olds with no family history) ^{5,6}

References

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