Colorectal cancer: management

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Abstract

Colorectal cancer is common with a lifetime risk of 5% and remains the second most common cause of cancer death with low 5-year survival (55%). Early detection through bowel screening and surveillance of genetic and inflammatory bowel disease high-risk groups aims to identify early disease. Specialist surgery, despite the associated morbidity and mortality offers the best chance of cure. Increasingly isolated multi-organ metastatic disease is resected with good results. This brief article summarizes management of colorectal cancer with focus on early rectal and polyp cancers, which may pose management dilemmas.

Keywords Colorectal; early rectal; neoadjuvant; polyp; surgery

Preoperative assessment and staging

Comprehensive preoperative assessment of colorectal cancer (CRC) patients is essential to determine the appropriate treatment. Careful history taking will uncover symptoms suggestive of impending obstruction or symptomatic anaemia and determine surgical fitness. Any family history of colorectal cancer, polyps, or other cancers that indicate genetic predisposition should be sought. Physical examination, digital rectal examination and sigmoidoscopy should be performed by the operating surgeon. The rectal examination should assess the distance of the tumour from the anal verge, sphincter complex involvement and degree of tethering or fixity. Rigid sigmoidoscopy will assess luminal circumferential involvement and narrowing in addition to the distance from the anal verge.

Staging investigations assess the extent of locoregional and distant disease; they will identify synchronous lesions and other prognostic factors, thereby helping to optimize management. All patients should undergo a computerized tomography (CT) scan of the chest, abdomen and pelvis. CT assesses the primary tumour and metastatic disease but is poor for nodal disease. Rectal cancer magnetic resonance imaging (MRI) may identify poor prognostic features such as mesorectal invasion, nodal disease and extramural venous invasion, and hence local recurrence (LR) potential (Figure 1). Endorectal ultrasound may enhance early rectal tumour assessment (T1/2 vs T3 stage). Synchronous lesions should be excluded in patients without obstructive symptoms by colonoscopy or CT colonography. Positron emission tomography (PET) scanning should be reserved for identifying occult disease when primary exenterative (eviscerative) or salvage surgery for recurrence is planned. All patients should meet a colorectal specialist nurse who will be accessible to explain the management plan and address their concerns. Where relevant, the stoma team should make early contact to discuss common stoma-related anxieties.

The demonstration of superior surgical and oncological outcomes when surgery is performed by specialist surgeons in high-volume hospitals has led to centralization of services.[1] All staging investigations are discussed by the multidisciplinary team (MDT: surgeon, pathologist, radiologist, nurse, oncologist) to tailor patient-specific management. Staging determines the surgical strategy, from transanal endoscopic microsurgery (TEM) to abdominoperineal resection (APR), and the rationale for neoadjuvant treatment in the context of patient-specific disease and co-morbidity. Further management is discussed below depending on disease stage.

Early colorectal cancer

Polyp cancer

Polyp cancers account for 0.75–5.6% of colorectal polyps excised at colonoscopy.[2] Bowel cancer screening has increased detection and 10% of screen-detected cancers are malignant polyps. Polyp cancer management is a complex balance of residual disease risk versus potential morbidity and mortality, and requires thoughtful discussion with the patient. The chief objectives are identifying potential malignant polyps, predicting residual disease risk and tailoring management appropriately. Several endoscopic features aid identification of malignant polyps, including size, flatness, ulceration, consistency, stalk broadening and non-lifting.[2] Invasive cancer risk increases with adenoma size. The Kudo and Paris classifications also account for flat or depressed lesions, which have significant malignant potential.[2] The Kudo polyp pit pattern can also indicate likelihood of malignancy. Polyps >1 cm should be tattooed submucosally 1–2 cm distal to the polyp site to allow follow-up and identification at surgery. Polypectomy techniques, aiming for complete resection, comprise snare polypectomy, endoscopic mucosal resection and endoscopic submucosal dissection. Importantly, piecemeal resection should not be undertaken when malignancy is likely unless as definitive palliative management.

Pathology helps to determine management, as several histological features are prognostic indicators (Figure 2). Malignant polyps are defined as an invasion of malignant cells into the submucosa and must be differentiated from epithelial displacement, which has no malignant potential. The risk of malignancy is greater in polyps with villous morphology. Patients with serrated polyps have a 2.5-fold increased CRC risk but the serrated polyp itself may not progress to malignancy. Poorly differentiated polyp cancers (7.2%) should be resected given the 10% risk of distant disease and 23% of nodal disease. Other adverse prognostic markers are mucinous, signet-ring and tumour-budding morphology.

The decision to offer surgical resection relies on combining these factors to predict locoregional disease. Locoregional recurrence risk depends on polyp size, morphology, resection

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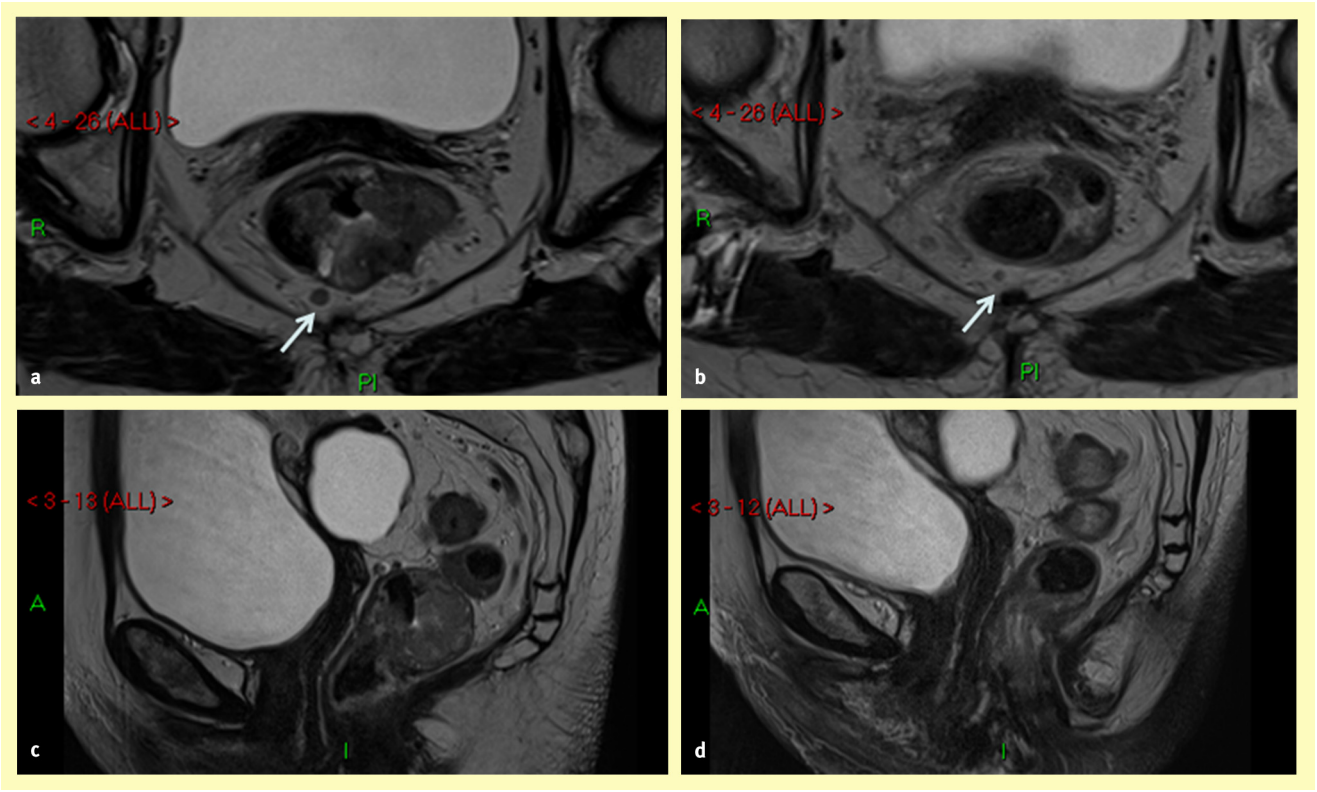

Figure 1 MRI rectal cancer prior to long-course chemoradiation (**a, c**) showing mesorectal lymph node (arrow) which is reduced in size post-treatment (**b**). Sagittal sections show an overall reduction in tumour bulk from pre-treatment (**c**) to post-treatment (**d**). (Images courtesy of Dr Stephen Glancy, Consultant Radiologist, Western General Hospital, Edinburgh.)

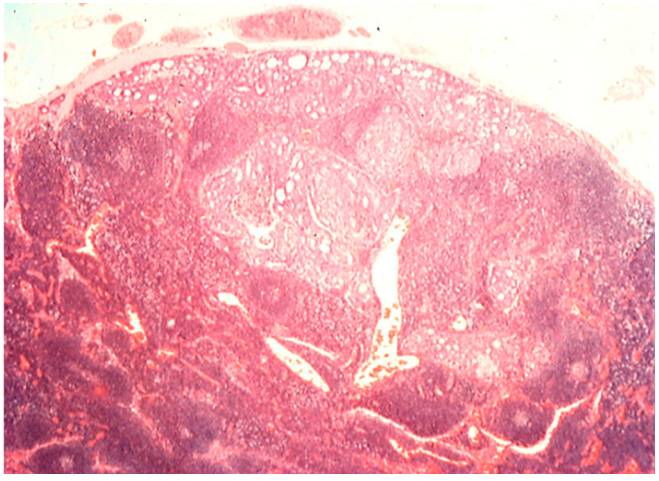

Figure 2 Mesenteric lymph node from Dukes' C patient showing infiltration with adenocarcinoma cells. (Image courtesy of Professor Mark Arends, Professor of Pathology, Western General Hospital, Edinburgh.)

margin, degree of differentiation, and lymphovascular invasion, which is an independent predictor of nodal involvement. Nodal disease increases from 7% if there is no lymphovascular invasion to 35% if this is present. Nodal disease risk is greater with sessile polyps than with pedunculated polyps. A positive resection margin ($\leq$1 mm) is an indication for completion resection but may be difficult to assess because of diathermy artefact or piecemeal excision. The nodal disease risk increases from 2% if the margin is >1 mm and there are no other poor prognostic indicators, to 33% if the margin is <1 mm.[3] Polyp submucosal invasion also indicates nodal involvement. The Haggit pathological classification suggests a 6.2% nodal disease risk if the polyp stalk is involved and this is lower if invasion is confined to the polyp head. Kikuchi levels of submucosal infiltration, which are reliant upon the presence of muscularis propria within the biopsy, assess sessile polyp invasion depth if lesions are removed *en bloc*. Deeper submucosal layer invasion (Kikuchi sm3) is associated with nodal disease in 14.4–23%.[4] Surgery is indicated if there is cancer at the polyp base, Haggit 4 or Kikuchi sm3 in sessile polyps.

MDT decision-making involves combined assessment of all features to estimate whether risk is low, intermediate or high, and to balance this against morbidity/mortality. Guidelines regarding residual disease scoring with recommendations for surgery versus surveillance are available.[2] High-risk patients should be offered surgery providing they are fit enough, but the majority will have no residual disease either locally or nodally. No imaging modality can be relied upon to detect nodal disease. Patients with polyp cancers who do not undergo surgery require follow-up surveillance with regular colonoscopy and CT imaging. MRI may be useful for surveillance after TEM.

Early rectal cancer

The term 'early' rectal cancer is used to describe an adenocarcinoma that has not invaded beyond the submucosa or muscularis propria (T1/2 N0). Early rectal cancer is present in 10–15%