Stages of progression

Stages of progression

Dukes classified carcinoma of the rectum into three stages (Figure 79.16). Dukes' staging /uni25CF A: The growth is limited to the rectal wall (15%). The prognosis is excellent (>90% 5-year survival). /uni25CF B: The growth extends to the extrarectal tissues, but with out metastasis to the regional lymph nodes (35%). The prognosis is reasonable (70% 5-year survival). /uni25CF C: There are secondary deposits in the regional lymph nodes (50%). These are subdivided into C1, in which the local pararectal lymph nodes alone are involved, and C2, in which the nodes accompanying the supplying blood ves sels to their origin from the aorta are involved. This does not take into account cases that have metastasised beyond the regional lymph nodes or by way of the venous system. The prognosis is poor (40% 5-year survival). A stage D is often included, which was not described by Dukes. This stage signifies the presence of widespread metastases, usually hepatic. Other staging systems have been developed (e.g. Astler–Coller , TNM) to improve prognostic accuracy , with the tumour–node–metastasis (TNM) classification now recognised internationally as the optimum staging classification (Table 79.2). Cuthbert Esquire Dukes , 1890–1977, pathologist, St Mark's Hospital, London, UK. The original Dukes' classification in 1932 gave three stages Ver non B Astler , surgeon, University of Michigan Medical School, Ann Arbor, MI, USA. Frederick A Coller , 1887–1964, pathologist, University of Michigan Medical School, Ann Arbor, MI, USA. - - , A–C.

Figure 79.16 Dukes' classi /f_i cation of colorectal cancer. A, the cancer is con /f_i ned to the bowel wall. B, the cancer penetrates the muscularis propria. C, involvement of the draining lymph nodes. Stage C was later modi /f_i ed: C1, pararectal nodes involved; C2, apical nodes involved. TABLE 79.2 TNM staging of rectal cancer. Tx: Primary tumour cannot be assessed T0: No evidence of primary tumour Tis: Carcinoma in situ , intraepithelial or invasion of lamina propria T1: Tumour invading submucosa T2: Tumour invading the muscularis propria T3: Tumour penetrating the muscularis propria into perirectal fat (mesorectum) T4a: Tumour penetrating visceral peritoneum T4b: Tumour directly invading or adhering to other organs or structures Nx: Regional lymph nodes cannot be assessed N0: No lymph node metastasis and no TD N1: 1–3 lymph node metastases N1a: 1 lymph node metastasis N1b: 2 or 3 lymph node metastases N1c: Submucosal, mesangial or peritoneum-covered paracolorectal TDs in the absence of regional lymph node metastases N2: ≥ 4 lymph node metastases N2a: 4–6 regional lymph node metastases N2b: ≥ 7 lymph node metastases M1: There are distant metastases M1a: Metastases are limited to 1 organ or site (e.g. liver, lung, ovary and extraregional lymph node metastases) M1b: Metastases to more than 1 organ or site M1c: Peritoneal metastases with or without metastases to other organs TD, tumour deposits.

Radiological staging All patients with a diagnosis of rectal cancer should undergo staging CT of the thorax, abdomen and pelvis (TAP) to stage both local and metastatic disease (Figure 79.17). Positron emission tomography (PET) scanning can be helpful in identi- fying metastases if imaging is otherwise equivocal or to identify multiple metastatic foci (Figure 79.18). MRI is the best modality to assess soft-tissue extent of the tumour, the degree of infiltration of the mesorectum

and mesorectal lymph node involvement and to ascertain whether the mesorectal fascia is potentially involved (Figur e 79.19 These determinations are of great importance in guiding both surgical and oncological management. Histological grading In the great majority of cases, carcinoma of the rectum is an adenocarcinoma, derived from malignant transformation of the columnar rectal epithelium. The more the tumour cells retain normal shape and arrangement (well di ff erentiated), the less aggressive the behaviour. Conversely , the more cells of an undi ff erentiated type, the more aggressive the behaviour. Other poor prognostic features include vascular and perineural invasion, the presence of an infiltrating (rather than pushing) margin and tumour budding. In a small number of cases, the tumour is a primary mucoid carcinoma. The mucus lies within the cells, displacing the nucleus to the periphery , like the seal of a signet ring. Signet ring carcinomas grow rapidly , metastasise early and have a poor prognosis. Summary box 79.10 Pathology and staging of rectal cancer). /uni25CF /uni25CF /uni25CF /uni25CF /uni25CF

Figure 79.17 Coronal and axial images from surveillance computed tomography showing a solitary 2.5-cm metastasis in segment 6 of the liver (arrow) in a patient with rectal cancer. (a) (b) Figure 79.18 (a) Initial screening computed tomography (CT) showing a 1.5-cm diameter solid lesion in the right lung, with tomography–CT indicating

increased metabolic uptake and (c) intestinal origin (courtesy of Dr Damian Tolan, St James’s Hospital, Leeds, UK). (c) (b) positron emission later CT-guided biopsy that con /f_i rmed adenocarcinoma from a lower gastro

Tumours are adenocarcinomas and are well, moderately or poorly differentiated They spread by local, lymphatic, venous and transperitoneal routes Circumferential local spread is the most important and dictates management Lymphatic spread follows the blood supply of the rectum in a cephalad direction via the superior rectal vessels to the para- aortic nodes, but in low rectal cancer it can also involve the lateral pelvic lymph nodes The TNM classi /f_i cation is the internationally recognised staging system

Figure 79.19 Axial and sagittal T2-weighted magnetic resonance images showing a locally advanced high-signal T3 mucinous rectal cancer with involvement of the posterior circumferential resection margin (thick arrows) anterior to the second sacral segment. Note the position of the peritoneal re /f_l ection and the peritoneum in relation to the tumour (thin arrows) (courtesy of Dr Damian Tolan, St James’s Hospital, Leeds, UK).

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