Multidisciplinary treatment of locally advanced rectal cancer

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One of the worst outcomes of the treatment of rectal cancer is a local recurrence. After the introduction of the total mesorectal excision technique with or without a short course of preoperative radiotherapy the local recurrence rate may not exceed 5% [1]. In case of a threatened circumferential margin, primary resection of the tumour will result in a high percentage of an involved margin with a subsequent high local recurrence rate. The TNM classification is not sufficient to make the distinction between primary resectable cases and patients in need of neoadjuvant treatment [2]. The following definition will be used for locally advanced rectal cancers: Any T4, any T3 with a predicted margin of less than 1 mm to the endopelvic fascia, any lymph node outside the TME field. A special challenge is the management of the tumours with the synchronous presence of distant metastases since most of these tumours are locally advanced as well.

Modern imaging techniques are necessary for accurate assessment of locally advanced tumours since digital examination only is inferior [3]. A computed tomography scan of chest and abdomen will provide optimal information about distant metastases in long, liver and retroperitoneal lymph nodes but even the primary tumour, if located higher up in the rectum, may be visualised sufficiently in most cases. All the information becomes available with the so-called 'one-stop shop'. A high percentage of distal rectal tumours fall within the definition of a locally advanced rectal cancer and especially the anterior located tumours are at risk [4]. In these cases, staging with magnetic resonance imaging (MRI) is mandatory since it gives a more optimal insight into the local tumour extension [5]. The positron emission tomography (PET) FDG scan has, at this moment, limited value since it does not give anatomical information and its use for measuring response after neoadjuvant treatment is not reliable. With the present methods, identification of lymph nodes suspected for metastatic disease is based on size. Improvement of lymph node staging within and outside the rectal envelope may be expected with the introduction of ultra small super paramagnetic iron oxide (USPIO)-enhanced MRI [6].

After staging, three groups of tumours can be distinguished: tumours with extensive tumour growth towards the endopelvic fascia but within the mesorectal envelope (including pathological lymph nodes), tumours invading adjacent structures but with growth limited to the pelvis, and tumours with metastatic extra-pelvic disease (liver, lung, para-aortic and/or inguinal). In the first two situations neoadjuvant radiotherapy (dose between 45 and 50 Gy) with a 5-FU based chemotherapy as a radio sensitiser should be considered as standard therapy [7]. The question is still open whether intensifying chemotherapy with the addition of a second drug will increase downsizing and downstaging without an increase of toxicity [8]. New studies will define the role of biological response modifiers in the chemotherapy schedules [9]. Neoadjuvant therapy with the goal of increasing the rate of sphincter saving procedures has not been successful [10].

Evaluation of the effect of the neo-adjuvant treatment is difficult and, probably, reporting the rate of R0 resections gives a better insight into the aimed effect of the treatment instead of mentioning the complete response rate. Imaging with MRI after the induction treatment is difficult since it may be impossible to distinguish between scar and remaining tumour.

After a waiting period of at least 6 weeks a TME resection may be performed in case of tumour confined to the pelvic envelope (even with autonomic plexus and sphincter sparing). In case of T4 tumours the operative procedure should exist in more extensive 'en bloc' resections with the extent mainly based on the primary imaging This may include lateral side wall resections and excision of involved organs. If an abdomino perineal resection is necessary a wide local resection with complete removal of the levator muscle has become standard [11]. The prone position may facilitate this procedure especially if the os coccyx or even a part of the sacrum has to be removed. Reconstruction of the pelvic floor or filling of the pelvic cavity with an omental or muscle flap (rectus abdominis or gluteus maximus) is often desirable.

After rehabilitation of this procedure, in most cases adjuvant chemotherapy is given although evidence is lacking from prospective randomised studies.

Tailor-made decisions have to be made in case of synchronous extra-pelvic lymph node or distant metastases. Usually induction chemotherapy is necessary for making a distinction between patients with or without a good prognosis based on the response [12]. A local resection in case of an expected long lasting remission is only justified if a R0 resection is the most likely outcome. There is no role for debulking surgery.

In summary, it has become clear that identification of locally advanced rectal tumours is based on imaging guided staging. Presently, effective neoadjuvant treatment is available after which, in most cases, radical surgery aiming at a R0 resection is still possible.

Conflict of interest statement

None declared.

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