

Cancer surgery in the elderly

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Age is not a limitation for surgery for cancer, tumour stage and co-morbidity define the surgical treatment.

Epidemiology, cancer statistics, and demography of the ageing patient were previously described. The increase in life expectancy is combined with a risk of developing a solid tumour, often requiring surgical intervention. The increased age of the population is accompanied by an increase of age-related diseases, such as cardiovascular disease, chronic obstructive pulmonary disease, hypertension, arthritis, diabetes mellitus and other malignancies. The mean number of co-morbidities has increased with age, while the number of patients without any co-morbidity has declined [1,2]. Beside the tumour stage, with higher stages in elderly cancer patients, the assessment of the co-morbidity is an important aspect of the surgical decision-making process.

There is an enormous improvement in the contemporary imaging in surgical oncology for the diagnosis, staging and management of cancer patients, e.g. spiral computer tomography (CT), magnetic resonance (MR) imaging and angiography (MRA), doppler ultrasound, intraoperative-, and laparoscopic ultrasonography, positron emission tomography (PET), single photon emission computerized tomography (SPECT), and sentinel lymph node imaging [3,4]. With the ongoing development of endoscopy, laparoscopy, thorascopy, ultrasonography, and biopsy equipment, as well as radioguided surgery, more minimally invasive techniques are currently available for the (surgical) oncologist in the optimal preoperative staging of gastrointestinal malignancies, bladder and prostate, lung, and head and neck cancer [4–6]. Biopsy procedures in cancer have undergone many evolutions and changes during recent years, and contemporary standards for taking biopsies in patients suspected of having cancer were defined. Elderly cancer patients are generally diagnosed with more advanced malignancies and all these techniques have the potential to provide a better, optimal diagnosis and staging strategy, followed by an appropriate (surgical) treatment.

The advancements in staging and the development and modifying of the extensive surgical resections and the introduction of stapling devices have improved the treatment results [6,7]. Although surgery is the mainstay of cancer treatment, the progress in cancer treatment, during the end of the last century was based on the development of combined modality treatment strategies including surgery, radiation treatment and/or chemotherapy, resulting in an increased local tumour control, disease-free and overall survival [8].

Radiation treatment after surgery can be with curative or palliative intent, and improvements in the radiation therapy techniques, such as conformal radiation therapy and brachytherapy, increased the local tumour control and decreased the radiation induced morbidity. During the last decade, there was growing experience of delivering combined cancer treatment modalities with surgery, pre-, and/or postoperative radiation treatment and/or chemotherapy, although in the majority of the different disease-oriented trials, the upper age limits were 65 years. Only a quarter of clinical trial participants are aged 65 years or older, although two-thirds of all cancer patients fall into this age group.

The limitations for (surgical) cancer treatment are based on the tumour stage, the age of the patient, the co-morbidity, lost and remaining functions, as well as psychosocial aspects, which allow or exclude combined modality treatment approaches in these elderly patients. The current standard combined treatment approaches of surgery, chemotherapy and radiation treatment are well defined for the different solid tumours, but there is a need for further exploration in the elderly cancer patients. Improvement in the diagnostic and surgical care of elderly cancer patients will have a final impact on disease-free and overall survival rates of the different types of cancer treatment. This improvement in survival will have its impact on the risk to develop a secondary malignancy, as well as treatment-related morbidity, of which both require, in general, again clinical and/or surgical

intervention. Surviving the cancer will on the other hand increase the risk of non-cancer-related diseases and the required treatment for these conditions.

Clinical tumour stage, patient's co-morbidity, and lost and remaining functions are extremely important for the clinical decision-making in the elderly cancer patient, as well as the patient's expectations, together with those of the family and caregivers. Co-morbidity needs to be assessed independently from the functional status [9].

There are more and more trends for one-day surgery, short-stay care, which often cannot be applied to these elderly patients. The change in the surgical care of cancer patients is responsible for the increased number of elderly cancer patients in the surgical wards of the hospitals.

After an optimal preoperative preparation of the patient, the surgical treatment of the elderly cancer patient can be divided into four parts, e.g. curative surgery, palliative surgery, emergency surgical intervention, or no surgical treatment; all have to be adapted, 'tailored' to the individual needs of elderly cancer patients. The team approach of caring for elderly cancer patients requires, besides the surgical oncologist, the medical oncologist, the radiation oncologist, anaesthesiologist and the contribution of a geriatric-oncologist. The peri-operative management, surgical and combined modality therapies for solid tumours are well defined, and summarised with respect to several new surgical strategies for the elderly cancer patient, as well as palliative- and emergency surgical oncology in the elderly cancer patient.

Peri-operative management

The clinical presentation of solid tumours in the elderly and the final outcome may be different from the so-called non-elderly cancer patients. Elderly patients often present with more advanced tumours, and have a lack of reserve, the difference between basal and maximal function, the capacity to meet increased demands imposed by their cancer or the surgical trauma, as well as an increased co-morbidity with an increase of age. The surgical-oncologist/physician must heed several guiding principles in the communication and physical examination of the elderly cancer patient; have patience, be flexible, accept the need for spending more time with the elderly cancer patients, their family and caregivers, and provide time for decision-making [10,11]. Assertive elderly cancer patient behaviour influences physician decision-making, leading to a more careful diagnostic testing [12]. Optimal preoperative preparation for

surgery is essential, since a large proportion of patients have age-related changes in immune function and therefore restoration or stimulation of the immune function is important. A large proportion of elderly cancer patients are malnourished. Perioperative care, rehydration, enteral or parenteral feeding, optimal local tissue perfusion and oxygenation, result in an improved wound healing and less risk for infections, and therefore reduce perioperative complications and mortality, and finally the clinical outcome.

The physical status of patients and their surgical risks are classified according to the American Society of Anaesthesiologists classification of physical status (ASA class I–V). Modern anaesthetic techniques, general and/or regional anaesthesia (regional block, epidural, or spinal anaesthesia), new techniques of anaesthetic monitoring and haemodynamic support have improved the safety of major oncological surgery in the elderly [13]. The improvement in the perioperative care, anaesthesiology, and intensive care facilities allow almost all major curative cancer operations in elderly cancer patients, although age and the presence of co-morbidity are independent risk factors for post-operative morbidity and mortality [14].

During the last decade, there was an enormous increase in the experience of laparoscopic staging and treatment of surgeons and anaesthesiologists. This knowledge can now be further applied in the laparoscopic surgery in elderly cancer patients, since these patients may benefit by minimally invasive surgical procedures. There is no question that laparoscopic staging of an elderly cancer patient is a lesser surgical trauma, than a staging laparotomy. On the other hand, laparoscopy may increase the risk for perioperative complications, due to haemodynamic and cardiorespiratory changes caused by the peritoneum. The technique is currently explored with or without intraoperative ultrasound as a staging procedure for gastric, pancreatic and prostate cancer, as well as therapeutically in colon surgery. The current place of laparoscopic surgery in (elderly) cancer patients is since the nineties still undefined, in contrast to the laparoscopic staging.

Elderly cancer patients may require earlier blood transfusions than similar younger patients, due to more advanced malignancies requiring extensive surgical resections and lack of reserve. Perioperative blood transfusions may impair morbidity, but some retrospective studies suggest transfusions even adversely effect prognosis. The latter was not confirmed in a prospective study, and it is therefore too premature to change transfusion procedures in elderly patients [15].

Good pain management, oral or regional, is a complex process in the elderly surgical patient, but essential for a smooth recovery and early rehabilitation. Postoperative pain management in elderly cancer patients is a serious problem. Pain may have a substantial impact on the recovery, but may also exacerbate underlying pulmonary or cardiac co-morbidities. Fear of pain results in less postoperative activity, increasing the risk of thromboembolism, urinary retention, faecal impaction, and atelectasis [16]. Further research in pain management in the surgical treatment of the elderly cancer is needed, but also in palliative cancer care.

Postoperative rehabilitation of the elderly surgical cancer patient is totally different from the younger cancer patient. Almost fifty percent of the elderly cancer patients experience a decline in function during their hospital stay [17]. Mental status, physical and social function prior to admission may be predictors of functional decline. Prevention and intervention by the medical team, as well as the family and caregivers are essential for the postoperative rehabilitation process, and the final quality of (surgical) oncology care.

Pulmonary and cardiovascular function in elderly patients may significantly be affected by the ageing process requiring extensive preoperative workup to optimise their pulmonary and/or cardiovascular status. Chronic obstructive lung disease, hypertension, congestive heart failure, arrhythmia can be treated by medication. Chronic obstructive lung disease requires dedicated ventilation during anaesthesia or postoperative ventilation in the ICU. Sometimes elderly patients need to undergo an implantation of a pacemaker, elective bypass surgery, angioplasty, or even valve replacement, before they are fit for any major surgical-oncological procedure. The same is true for (a) symptomatic aortic-aneurysms, which may require surgical resection or endoluminal stent grafting, before further intra-abdominal cancer surgery can be performed.

In fact there is, in general, no age limit for cancer surgery; age and co-morbidity are risk factors for the development of complications, and may be finally even the limiting factors for surgical intervention [18].

New surgical strategies in the elderly cancer patient

The curative surgical options for the various solid tumours, with surgery alone or in combination with (neo)adjuvant chemotherapy or radiotherapy are well described in the surgical textbooks, and will not

summarised in this chapter. During the last 20 years, there have been a few new developments in the surgical care of cancer patients of which a few may have implications for the surgical care of the elderly cancer patient. These new (surgical) strategies for the elderly cancer patient are summarised in connection with some current treatment options for solid tumours.

Lung cancer

The majority of lung cancer patients are incurable at presentation, and this is, and will be, the leading cause of death in men and women. Lung cancer is more physically debilitating than other malignancies [19]. Non-small cell lung cancer (NSCLC) surgery is less often performed in elderly patients, although the surgery can be performed safely over the age of 70 years [20,21]. A major breakthrough in the treatment of NSLCs might be the non-invasive staging of local and distant metastases of NSLC with fluorodeoxyglucose (FDG) PET [22]. In contrast, the role of Video-Assisted ThoracoScopic (VATS) for lobectomies, or mediastinal lymph node dissection has yet to be defined [23]. Surgery with neo-adjuvant chemotherapy and/or radiation treatment has not altered the disease outcome during the last decade. Surgery remains the primary treatment for stage I, II and IIIA NSCLCs. (See also Chapter Lung cancer of the ECCO Education book).

Pulmonary metastases constitute a significant cause of morbidity and mortality, and (elderly) cancer patients with isolated lung metastases of solid tumours may be candidates for metastasectomy, although the surgical management of pulmonary metastases remains controversial [24].

Colorectal cancer

The incidence of colorectal cancer is increasing with age. This tumour type is the most common malignant disease in elderly people in the Western world. The prognosis is related to the penetration of the tumour through the bowel wall and the presence or absence of nodal involvement.

The treatment of locally advanced colon cancer is, either for cure or palliation, a hemi- or subtotal-colectomy, a Hartmann resection, with resection of invaded adjacent structures, regardless of age. Failures to do so results in a significantly increased local recurrence rate and decreased survival. The type of surgical resection depends on the position of the tumour in the bowel, and whether the patient presents electively or as an emergency. Age, and or

advanced disease are not a contraindication for colon surgery [25]. Delay in the diagnosis contributes to the presence of relative advanced disease in the elderly, resulting sometimes in bowel obstruction, and bowel perforation which are indicators for poor prognosis [26]. The morbidity and mortality figures for elective procedures are not different from the younger age population. The patients' co-morbidity influence the treatment-related morbidity and survival [27]. Hand-assisted laparoscopic colon resection, or laparoscopic techniques for faecal deviation are new, promising surgical techniques with the potential to improve colon cancer surgery in elderly patients, with an early mobilisation, oral nutrition, short hospital stay, and less trauma and stress [28]. The place of laparoscopic colon resections for colon cancer is undefined, and treatment-related morbidity, disease-free and overall survival figures are awaited.

Patients with stage III disease may benefit from adjuvant 5-fluorouracil (5-FU) and leucovorin, while this is controversial for stage II disease. The upper age limit for adjuvant chemotherapy for colon cancer is, in general, 70 years, although elderly patients with good performance status tolerate adjuvant and palliative chemotherapy as well as younger patients [29–31].

The treatment of Stage IV colon cancer in elderly cancer patients should be individualised. The surgical treatment options are resection or bypass of the primary lesion. There is seldom an indication for surgical resection of metastatic disease, however palliative chemotherapy is optional.

In the treatment of rectal cancer there are four goals: cure, local tumour control, restoration of intestinal continuity, and preservation of the anorectal sphincter. For the local control rate there are surgical and centre-related variabilities in patient outcome. The distal resection margin should be at least 2 cm. Surgical options are abdominal perineal resection (APR), low anterior resection (LAR), Hartmann's procedure, rectum resection with a colon anal anastomosis (CAA), or local tumour resections. T3 lesions should be treated with a short course of preoperative radiotherapy, T4 lesions with preoperative chemoradiation. The treatment related morbidity of the surgical procedure has to be taken into account by selecting the appropriate type of surgical resection. The Hartmann's procedure is in general a good option for the elderly rectal cancer patient [32–34]. The technique of Total Mesorectum Excision (TME) in the treatment of rectal cancer is not defined, but has the potential to decrease the risk for local failure. Data from the Dutch TME rectal cancer trial will become available in early 2001.

The relationship between age and outcome from colorectal cancer surgery is complex and may be confounded by differences in stage at presentation, tumour site, pre-existing co-morbidities, and type of treatment. There is no relationship between blood transfusions and prognosis in colorectal cancer, and no evidence based data that justify follow-up of (elderly) patients with colon cancer, since the impact on patient quality of life and survival are not clear [35,36]. Although complications and morbidity figures increase with age, the survival figures are the same, and therefore colorectal cancer surgery should not be denied based on age [37]. (See also for further reading the chapter on colorectal cancer in the ECCO Education book).

Breast cancer

In the past, the (surgical) treatment of breast cancer has focused on three major issues; the early detection of breast cancer by screening mammography, the development of breast conservation treatment (BCT), the development of adjuvant chemotherapy and/or hormonal therapy treatment schedules, and, more recently, the selection of patients who are candidates for axillary dissection based on the selective lymph node biopsy (SLNB) technique.

Breast cancers in elderly women are more likely to be well differentiated tumours, containing oestrogen receptors and have a low thymidine labelling index [38,39]. These favourable prognostic factors have to be taken into account in (surgical) breast cancer treatment of elderly women.

The screening mammography programmes have, in general, an upper age limit of 65 years, although the incidence and mortality rate of breast cancer is increasing in the elderly [40]. The early detection of minimally invasive breast cancer due to the introduction of the mammography and screening programmes, resulted in an increase of BCT and declining mortality rates [40]. Despite the high prevalence of breast cancer in elderly women, they largely have been excluded from breast cancer screening programmes and clinical trials and they are often not offered the same therapeutic options as their younger counterparts [41]. This may be an explanation why breast cancer mortality has not decreased for women over the age of 80 years [42]. Extending the breast cancer screening programmes to 75 years seems beneficial. There is no benefit for screening over the age of 75 years [43].

Should there be a difference between the surgical treatment of elderly women and younger women? A modified mastectomy is the most common surgi-

cal treatment for elderly breast cancer patients for obtaining local tumour control with a low morbidity rate and a mortality rate of less than 1% [44]. Randomised trials have demonstrated that there is no difference in survival after a modified mastectomy or BCT, although these trials did not include women over the age of 70 years. The local recurrence rate after BCT was in the elderly women lower than in the younger age group, and adjuvant tamoxifen further decreased the local failure rate [45,46]. This can be explained by the adverse pathological features for the younger women in comparison to the elderly women. Exclusion for BCT in elderly breast cancer patients with T1–2 tumours should be based on the patient's co-morbidity, e.g. heart failure or decreased pulmonary function, or patient's preference.

Although radiation treatment is sometimes omitted in the elderly breast cancer patients after lumpectomy, whole breast irradiation with or without a boost, is a part of the BCT and well tolerated. Patient's inability to travel to the radiation facility is often a reason for omitting radiation treatment, or a reason to choose a modified mastectomy. A promising alternative to the standard radiation treatment in BCT is the concept of intraoperative radiotherapy (IORT), in which a single dose of 21 Gy of electrons is delivered to the tumour bed, while sparing the normal breast tissue, without additional whole breast irradiation, as mentioned by Veronesi during the James Ewing Lecture held during the 54th Congress of the Society of Surgical Oncology in Washington, 17th March 2001. This technique may increase the number of BCT possible in elderly women. Recently, in breast cancer, the first trial barrier for elderly cancer patients was taken down. A phase III trial investigated adjuvant tamoxifen with or without radiotherapy following lumpectomy for tumours less than 2 cm with clinically negative nodes in women age 70 years and over (Protocol CLB-9343).

Nodal status is the single best predictor for patients with operable invasive breast cancer. Axillary dissection provides the most optimal lymph node staging, and is an effective method for maintaining locoregional control of the axilla, but has a severe morbidity. Lymphoedema of the arm is associated with the greatest disability. Elderly women are especially at risk for developing lymphoedema, raising the question of whether axillary dissection is necessary solely to maintain locoregional control. For breast cancer patients with a clinical node-negative axilla, radiation treatment to the axilla is as effective as axillary dissection in maintaining locoregional control [47]. Recently, radioguided surgery was introduced in the nodal staging of breast cancer, the

sentinel lymph node (SLN) is defined as the first draining lymph node of a breast tumour, and if correctly identified, accurately predicts the histological status of the lymphatic basin. The SLN is identified with the use of the radiocolloid technique in combination with the blue dye technique and several studies demonstrated an identification rate of over 95% with a false-negative rate of less than 3% [48]. The SLN concept can also be applied in elderly breast cancer patients, and provide an optimal nodal staging with a minimal morbidity, and therefore improve the quality of breast cancer care in the elderly. (See also for further reading the chapter on early breast cancer in the ECCO Education book). The local treatment of T4 breast cancer, a systemic disease, is individualised, and requires sometimes a palliative ablation. Adjuvant chemo- and/or hormonal therapy, or radiation treatment is outlined in the different paragraphs, but there is a trend for a more aggressive surgical approach in these elderly patients to improve the quality of life. The treatment of metastatic bone disease is, in general, local radiation treatment, biphosphonates, and seldom surgery [49].

Stomach and oesophagus

A quarter of newly diagnosed cancer patients are over 80 years of age. Resectability of gastric cancer in the elderly has increased due to the ability to perform extensive resections, with no difference with respect to the curability rate between elderly and younger gastric cancer patients. However, there is a significantly increased morbidity and mortality rate and a worse survival rate with increasing age. Extensive gastric resections (D2 resection) is accompanied with a severe morbidity and mortality and therefore not a standard operation in the elderly gastric cancer patient [50]. During the last decade, several neoadjuvant chemotherapy strategies were designed in order to improve survival, but without any success, and elderly cancer patients were excluded from these studies. Although adjuvant radiation therapy may improve disease-free survival after gastrectomy, the treatment is generally barely tolerated in elderly patients.

In cases of palliation, for gastric outlet obstruction a gastroenterostomy is a good palliative procedure. In contrast, there is seldom an indication for a palliative partial, subtotal or total gastrectomy, unless there is a limited tumour burden.

Oesophageal cancer is a disease of the elderly, generally presenting with an advance stage and therefore poor prognosis. The treatment of choice of oesophageal cancer in the elderly is controversial,

either surgery or non-surgical, as well as the type of resection, and the need for an extensive lymph node dissection, as well as the relevance of the use of chemoradiation. If elderly cancer patients are fit for surgery, oesophagectomy remains the standard care. There are no data that support an aggressive combined modality approach, such as chemoradiation.

There are two important developments in the staging of oesophageal cancer. The development of better endoscopy equipment with the potential of an enhanced accuracy in local staging with endoscopic ultrasonography (EUS), as well as the EUS-guided biopsy for tumour typing, and the facility with PET to stage locally advanced oesophageal cancer, which ultimately allows a better selection of elderly oesophageal cancer patients who may benefit from surgery [51]. There is also progress in the palliative treatment of oesophageal cancer. If the patient is unfit for surgery, there are two options; radiation, brachytherapy or external beam radiotherapy, or endoluminal palliation techniques, such as stenting and laser treatment.

The development of the laparoscopic staging with intraoperative ultrasound has merged in the preoperative staging of stomach and oesophageal cancer in elderly cancer patients who are candidates for surgical resection.

Pancreatic cancer

Nearly 80% of all pancreatic cancer patients are over the age of 60 years. The incidence rates are virtually identical to the mortality rates and less than 1–4% of the patients will survive 5 years. The majority of the malignancies are adenocarcinomas localised in the pancreas, a small proportion in the ampulla of Vater, distal common bile duct, or duodenum. Clinical symptoms at presentation are weight loss, pain and/or jaundice. Very few elderly pancreatic cancer patients have a resectable tumour and are fit enough to undergo an extensive surgical resection. The best palliation is the endoscopic insertion of a biliary endoprosthesis to relieve obstructive jaundice, and if necessary a celiac ganglion block.

Prostate

Many prostate cancers are indolent and elderly patients must carefully assess the risks and benefits of surgery compared with other treatment options such as hormonal treatment, radiation treatment. Development of new more sophisticated irradiation techniques are currently under way, as well as the development of the new technique of high frequency

ablation. The surgical treatment approach for elderly prostate cancer patients with well or moderately well differentiated tumours should be more conservative than for those with poorly differentiated tumours in the younger age group. Prostate cancers in elderly men are slow-growing tumours, and other diseases may become the more dominant disease before the prostate cancer has even metastasised. (See for further reading the chapter on prostate cancer ECCO Education book).

Gynaecological malignancies

The treatment of gynaecological malignancies such as vulvar cancer, cervical and endometrial cancer, as well as ovarian cancer are well defined with respect to the surgery, radiation treatment and chemotherapy. There are two developments in the treatment of gynaecological malignancies, which have an impact for the elderly women with cancer, one is the sentinel lymph node biopsy (SLNB) concept in the treatment of vulvar cancer, and the other is the aggressive surgical approach in ovarian cancer.

A major breakthrough in the treatment of vulvar cancer is the introduction recently of the SLNB to select patients who are candidates for a therapeutic lymph node dissection, therefore decreasing the incidence rate of lymphoedema [52]. Although the concept is still not proven, the future looks promising with respect to a better quality of life and less functional impairment [53].

Women with ovarian cancer have a high incidence rate of local recurrences. The standard therapy is cytoreductive surgery followed by combination chemotherapy. Intraperitoneal chemotherapy is experimental, secondary cytoreductive surgical approaches followed by combination chemotherapy have improved survival figures [54]. The rapid improvement of the performance status of elderly ovarian cancer patients may be impressive, and warrant this aggressive treatment approach.

Melanoma

There is no difference between the surgical treatment in younger or elderly melanoma patients; resections margins are well defined and there is no indication for elective lymph-node dissection or adjuvant perfusion [55]. The sentinel node concept was developed in the early nineties for a better staging of the melanoma patient [4,56]. There is currently one clinical trial investigating the value of the SLNB in the elderly melanoma patient. The Morton trial investigates the value of SLNB in melanoma patients with a

Breslow thickness of 1–4 mm, SLNB vs. observation with an upper age limit of 75 years. Results of the trial are pending, but will answer the major question, does early lymph node dissection in melanoma patients translate into a better disease-free and overall survival in melanoma patients? As soon as answers are available, the SLNB technique can be introduced, or excluded for further implementation in elderly melanoma patients. Roughly 20% of the SLNBs are positive, and in almost 90% of the positive SLNB patients the sentinel node is the only positive lymph node, therefore the chance of cure by a therapeutic lymph node dissection seem to be high [4,56].

Soft tissue sarcoma

Soft tissue sarcomas (STS) are rare and there is a great variability in their clinical and histopathological presentation, half of the patients are over the age of 65 years, and high grade STS have a high tendency to metastasise [57]. Recent Dutch STS studies showed that above 70 years of age, 16% of patients received no treatment at all, and referral of elderly STS patients to dedicated STS centres declined with age in a linear fashion [57,58].

Surgery is the only curative treatment option for sarcomas. Chemotherapy is not standard treatment for STS in elderly patients, in contrast to children and adolescents [59]. Limb-sparing surgery is the standard approach for localised extremity STS in the elderly, with or without adjuvant radiation treatment [60]. Elderly STS patients with primarily irresectable, locally advanced extremity STS are, in principle, not candidates for regional chemotherapy, intra-arterial or isolated perfusion, with or without adjuvant radiation treatment [61,62]. Radical surgery, with a curative or palliative intent, is the first option for these patients. Elderly STS patients with isolated lung metastases during follow-up are candidates for metastasectomy. STS arising in the retroperitoneum is an often-neglected diagnosis. Retroperitoneal STS grow to large sizes before they become clinical apparent, and they often involve important structures, that preclude adequate local resection, resulting in a high local failure rate [63,64]. Intraoperative radiotherapy with low dose external beam radiotherapy may increase local tumour control and decrease the risk for radiation enteritis [65]. New promising treatment strategies for liposarcomas with so-called differentiation therapy with rosiglitazone, as well as for Gastro-Intestinal-Stromal cell-Tumours (GIST) with c-Kit inhibitors are under way, but results in elderly cancer patients with retroperitoneal STS are pending [66,67].

Surgery is the only treatment option for elderly patients with STS, and although in general extensive surgical resections are necessary, sometimes combined with adjuvant radiation treatment, or even ablative surgery. The treatment is well tolerated in the elderly patient, rehabilitation is, in general, successful, and the patient is ensured a good quality of life [60].

Emergencies in surgical oncology

Emergencies in surgical oncology can be divided into treatment- and non-treatment-related surgical oncological emergencies. Every surgical oncological emergency is different and needs to be tailored to the individual elderly cancer patient, always taking the quality of life into consideration.

Bowel obstruction may be the first sign of a colorectal cancer, or caused by diffuse peritoneal carcinomatosis. Generally, dehydration and electrolyte disturbances require correction with intravenous fluid, while the bowel is decompressed with the aid of a nasogastric suction. Surgery is advisable in cases of colon or ovarian cancer, while for other causes of peritoneal carcinomatosis any therapy must be tailored to the diagnosis, patient's condition and expected quality of life. Bowel perforation requires immediate surgical intervention, in contrast to gastro-intestinal haemorrhage, which is treated conservatively, if possible. Improvements in the non-surgical treatment of the gastro-intestinal bleeding by endoscopy, and/or intervention radiology have decreased the indication for acute surgical intervention, and therefore provided the opportunity to restore the patient's condition with optimal staging possibilities and appropriate cancer treatment.

Radiation enteritis is a frequently seen complication after abdominal irradiation for pelvic malignancies, causing malabsorption, fibrosis and strictures. This complication is often seen in the elderly patient, treated at a younger age for cancer. Radiation complications are often underestimated by the non-surgical-oncologist. They are preferably conservatively treated and when surgical intervention is required, careful tissue handling, and no bowel resections but surgical bypasses are advised.

Other emergencies such as ascites, pleural effusions, jaundice, obstructive uropathy, upper airway obstruction, and spinal cord compression are not typically surgical and therefore not discussed.

In surgical or oncological emergencies in elderly cancer patients, the quality of life of the cancer patient has to be taken into account, as well as the

wish of the patient, family and caregivers, before any treatment is initiated. Sometimes it is "better to die, than to be treated".

Palliative surgery and palliation

Staging of the cancer patient is an essential part of the diagnostic process. In cases of metastatic disease, or locally advanced unresectable disease palliation is a major part of the cancer treatment. Surgery could be one of the palliative treatment options. In palliative surgery two types of procedures can be distinguished: (1) palliative procedures to relieve functional symptoms or pain, and (2) supportive procedures as a technical intervention as part of a multidisciplinary treatment plan. Palliative surgery is frequently performed in the elderly cancer patient.

Palliative procedures can be drainage of effusions (ascites, pleural, pericardial), obstruction (respiratory, gastrointestinal, urological, vascular), control of pain, palliative resections to relieve symptoms, while supportive care can be vascular access for parenteral feeding or intra-arterial chemotherapy, or enteral feeding tubes.

There are several new techniques developed to relieve respiratory obstructions, such as laser ablation, electrocautery, cryotherapy, intraluminal radiation and photodynamic therapy. In cases of oesophageal obstruction there are options of endoscopic dilatation, laser ablation or self-expanding stents. In contrast, for gastric outlet obstruction or small bowel obstruction a laparotomy with a surgical bypass procedure is indicated. Large bowel obstructions often require a colostomy, by laparotomy or laparoscopy. The appropriate use of surgery in the above-described settings may improve the quality of life of the cancer patient.

Bowel obstruction is a relatively common complication of advanced gastrointestinal malignancies. Although surgery can provide the majority of the patient's valuable palliation, there could also be a non-operative scenario. The goals of the non-operative scenario are optimal symptom control of the terminally-ill patient by medical management and good palliative care with the aid of anti-emetics, pain control with diamorphine, combined with dexamethasone and octreotide to reduce endocrine and exocrine secretion of the pancreas, stomach and intestine. Intravenous drug or fluid delivery are not necessary, diligent mouth care relieves thirst and provides comfort [68].

Palliation is not only the (surgical) management of symptoms; palliation extends from the initial care

in seeking cure to the final hours of a patient's life. Educational efforts are needed to ensure that all patients, including the elderly, have adequate (surgical) palliation of their cancer-related symptoms [69]. (See for further reading also the chapter on palliative care-global patient management in the ECCO Education book).

Summary

Surprisingly, cancer in the elderly is frequently treated in a poor manner, and the behaviour of the disease in elderly patients is often poorly understood [70]. Cancer treatment varies significantly with age, the percentage of patients receiving definitive treatment declines with increasing age, and there is a decline in survival of cancer with age [71–73]. One of the contributing factors may be that physicians are less likely to recommend specialist consultation for elderly patients [71]. One has to keep in mind that cancer surgery in the elderly, without any co-morbidity, is safe, and that, nowadays, the morbidity and mortality increases minimally with the age of the patient. In contrast, the morbidity and mortality is 2–3 fold as high in the elderly cancer patients with co-morbidity compared with younger cancer patients. A better public education of the elderly may increase cancer awareness, and therefore decrease the risk of developing symptoms that require emergency surgery, with a subsequent three times increase in the mortality rate. Surgeons treating elderly cancer patients should realise that performance status is more important than age, and should always keep in mind the three major questions as recently formulated by Balducci: (1) is the patient going to die of cancer or with cancer, (2) is the patient able to tolerate the surgery and possible surgical-related complications, and (3) is the patient likely to suffer the complications of cancer during her/his life [74]?

The increased number of surgical treatment options in elderly cancer patients will lead to an increase in overall cancer survival in elderly cancer patients, and contribute to an improvement in their quality of life. Surgical oncologists should focus on how to manage the most common cancers in elderly people such as breast, colorectal, lung and prostate, as well as take an active part in palliative treatments.

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