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Nutritional assessment and screening for malnutrition

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Summary
Malnutrition can be detected in up to 50% of patients with gastrointestinal cancer. Although malnutrition reflects the severity of cancer, it is important to underline that anticancer treatments including surgery likely increase the severity of malnutrition. Additionally, malnutrition is associated with an increased risk of perioperative morbidity and mortality. Nutritional assessment should be a part of pre-treatment work up of gastrointestinal cancer patients because nutritional support has been shown to limit the negative impact of malnutrition on perioperative outcome. The objective of these practice guidelines is to address the following questions regarding nutritional screening in gastrointestinal cancer patients: who should benefit from nutritional assessment, when nutritional assessment should be proposed, how nutritional assessment should be carried out and why nutritional assessment is indicated.

Introduction

Malnutrition is very common in patients suffering from gastrointestinal cancer [1]. In these patients, malnutrition is both a symptom of the underlying disease, a reflection of the severity of the disorder and also a factor which is liable to increase the morbidity and mortality of operative and perioperative care [2,3]. Treatment of malnutrition when this is diagnosed before surgery can reduce its consequences on the risk of postoperative complications [3,4]. For this reason, identifying people who are malnourished or at risk of malnutrition can improve the management of patients suffering from gastrointestinal cancer.

Malnutrition has a deleterious effect not only on the postoperative course of cancer surgery but can also complicate or even limit administration or compromise the effectiveness of other treatments such as chemotherapy or radiotherapy in the perioperative period. In addition, when these other treatments are administered pre- or postoperatively they are also liable to worsen pre-existing malnutrition. For all of these reasons, screening for malnutrition in patients with gastrointestinal cancer should be carried out from the beginning of the patient's management, and therefore usually well before surgery.

Many tools have been proposed to detect malnutrition in patients suffering from cancer. In the perioperative situation

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the diagnostic tools for malnutrition need to be both reliable and reproducible but also easy to use in order not to delay patient management.

The aim of his chapter is to answer the following questions about screening: who to screen, when to screen, how to screen and why screen for malnutrition in patients treated in gastrointestinal oncology.

Why screen?

Severe malnutrition in gastrointestinal oncology is associated with a poor prognosis and an increase in the risk of postoperative complications, the magnitude of which depends on the type of surgery [2,3]. Several controlled trials and meta-analyses have shown that nutritional care, regardless of route of administration, in patients with moderate or severe preoperative malnutrition before surgery for gastrointestinal cancer can reduce postoperative morbidity by approximately 20% and also reduce postoperative mortality to a lesser extent [3-10]. In one large prospective study on 468 patients undergoing surgery for gastrointestinal cancer who had moderate to severe malnutrition (SGA grade B or C), administration of preoperative artificial enteral or parenteral nutrition reduced the risk of postoperative complications from 33.5% in the control group to 18.3% in the treatment group ($P = 0.012$) [5]. In the same study [5], nutritional care reduced postoperative mortality from 6% in the control group to 2.1% in the treatment group ($P = 0.003$).

The effectiveness of preoperational nutritional care has therefore been clearly established. Only patients in whom screening for malnutrition has actually been carried out can benefit from the effectiveness of his care. In other words, early detection of moderate to severe malnutrition can improve the prognosis of oncology patients as effective means are available to correct it.

Many prophylactic measures are currently recommended in gastrointestinal cancer surgery [11]. Screening for and correcting malnutrition is the one which has been shown to have the greatest impact and benefit. As an example, the benefit of anti-thromboembolic prophylaxis, which is accepted and performed by the whole surgical community, is less than that of correcting malnutrition. In particular, unlike correcting malnutrition, its impact on surgical mortality remains relatively marginal [12].

Who to screen?

The incidence of malnutrition in gastrointestinal oncology may be as high as 50% or even more and varies particularly depending on the site of the tumour and extension of the disease at the time of diagnosis [1,13]. In a recent French study [1] on 1902 patients suffering from cancer, the incidence of malnutrition, defined as a body mass index of < 18.5 kg/m^2 or weight loss of over 10% of usual weight over 6 months, was particularly high in patients with upper gastrointestinal tract cancer, ranging from 60 to 67%, although the incidence was still 39% in patients with lower gastrointestinal (colorectal) cancer. Over half of the patients in this study (55%) felt that they had considerably reduced their food intake since the cancer was diagnosed whereas only 41% received nutritional care [1]. Independent risk factors for malnutrition were locally advanced disease, metastatic disease, administration of chemotherapy and of radiotherapy.

Table 1 Risk factors for malnutrition in patients suffering from gastrointestinal cancers.

Patient related risk factors
• > 70 years old • Sepsis • Chronic diseases: diabetes, organ impairment, neuromuscular disease, pre-existing obesity, cognitive disorders, depression, HIV/AIDS, inflammatory state. • Past history of major gastrointestinal surgery (short bowel, pancreatectomy, gastrectomy, bariatric surgery)
Disease related factors
• Persistent symptoms: dysphagia, nausea, vomiting, pain, diarrhoea, dyspnoea • Upper gastrointestinal tract cancer: oesophagus, stomach, pancreas • Locally advanced disease • Metabolic spreads
Treatment-related risk factors
• Radiotherapy – Chemotherapy • Polymedication > 5 agents • Corticosteroid therapy

This study confirmed not only the high prevalence of malnutrition in patients suffering from gastrointestinal cancer, but also showed that treatments for the tumour administered during the preoperative period could worsen the malnutrition [1]. In another study in 1,545 patients treated in French Cancer Centres, the prevalence of malnutrition was 30.9% [14]. The risk factors for malnutrition in this study were pre-existing obesity defined as a BMI of > 30 kg/m^2 at the time of diagnosis of the cancer, WHO status of ≥ 2 and the presence of upper gastrointestinal tract cancer [14]. These 2 recent studies confirm other older findings which included fewer patients and which had already reported equivalent or even greater prevalences of malnutrition in gastrointestinal cancer [15-18].

Table 1 shows the different risk factors for malnutrition found in patients with gastrointestinal cancer. Some of these factors are patient-related and others are related to the malignant disease and its treatment. According to the European [19,20] and French guidelines produced jointly by the Société Française d'Anesthésie Réanimation and the Société Française de Nutrition Clinique et Métabolique [21], existence of any of the risk factors shown in table 1 should result in routine screening for malnutrition (expert advice).

Furthermore, the impact of malnutrition on the risk of postoperative morbidity and mortality also varies depending on the type of gastrointestinal procedure considered. For these reasons and in order to assess the impact of malnutrition in more detail, it has been proposed that nutritional risk be stratified firstly according to the risk factors for malnutrition which have already been established and secondly on the type of surgery. Nutritional groups have therefore been established depending on this risk (Table 2) [21,22]. Based on the description of these groups only patients in group I, i.e. nutritional screening can only be omitted in non-malnourished patients with no risk factors for malnutrition who are candidates for surgery associated with a low risk of complications. All of the patients with cancer referred