Prehabilitation in the cancer care continuum

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Several years ago, the term of “prehabilitation” was implemented to describe an intervention before starting cancer treatment during the pretreatment period with the aim to improve the functional status of patients just diagnosed with cancer [1–4].

The concept of prehabilitation is a modern strategy in the continuum of cancer care with the power to improve the functional status of cancer patients leading to reduced morbidity due to reduction of post-treatment (for example postoperative) complications and due to increased ability to obtain necessary cancer treatment, namely better tolerance of necessary cancer treatments (for example surgery, radiation, chemotherapy completion rates). Furthermore, prehabilitation could be used with the intention to improve compliance concerning rehabilitation efforts during (early rehabilitation in hospital) and after cancer treatment, namely inpatient and outpatient cancer rehabilitation in specialized cancer rehabilitation centers [1–3]. The concept of prehabilitation enables cancer patients to become proactive during the pretreatment period in order to actively improve their health outcomes [1, 3]. Besides the prevention of complications of necessary cancer treatment, prehabilitation has been shown to reduce length of hospital stays [1–4].

Prehabilitation concepts can be either unimodal or multimodal. The unimodal approach of prehabilitation is the application of different forms of exercise alone [1, 5]. Regular exercise leads to a better functional capacity, which is the basis of improved functional status with the result of reduced post treatment complications and morbidity. Furthermore, the active intervention of exercise has been described to be “medicine in oncology”. This due to the fact, that there is a strong level of evidence for the benefit of exercise on cancer-related health outcomes by improvement of perceived physical function and by reduction of fatigue, anxiety and

depressive symptoms, and quality of life, and a moderate level of evidence for the benefit of exercise on bone health, namely osteoporosis and on night sleep. In the continuum of cancer care, the active intervention of exercise should start as early as possible [1, 5].

The multi-modal approach is an interdisciplinary and multi-professional combination of exercise with further components, such as patient education, psychologic counseling (psycho-oncology), nutrition, smoking cessation, and reduction of alcohol consumption [1, 3]. Patient education and information, smoking cessation and alcohol reduction aim to reduce relevant risk factors in cancer patients. In this concept, psychological counselling (psycho-oncology) focusses very early on anxiety, worries, dysthymia and motivation.

In patients suffering from abdominal cancer or from lung cancer, prehabilitation interventions have been shown to reduce postoperative respiratory complications, and to reduce the length of hospital stay [1, 6–8]. In prostate cancer patients, prehabilitation can lead to a reduction of postoperative incontinence following prostatectomy [1, 9]. Breast cancer patients have been shown to have a better chemotherapy dose tolerance with higher chemotherapy completion rates and therefore better outcomes [1, 10]. Furthermore, prehabilitation can lead to a better shoulder girdle mobility in this patient group, which is relevant for chemotherapy applications and radiation treatment [1, 10].

In the last years, prehabilitation has been well-studied and shown benefits in different disease groups, such as orthopedic, cardiac and obese patients before surgery, for example.

There is a growing body of scientific evidence, which indicates the relevance of cancer prehabilitation with expected benefits on functional status with better tolerance of necessary cancer treatments, reduced morbidity, and a reduction of health care costs due to a reduction of complications and of length of hospital stays. Furthermore, prehabilitation can improve quality of life and enable patients to earlier start cancer rehabilitation [1–4]. Maybe, there are also positive effects on motivation for rehabilitation because of experiences with benefits on functional status after

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prehabilitation [1–4]. At our Department, we use the prehabilitation concept during the pretreatment period not only to improve the functional capacity and status of patients, but also for education, namely the information and motivation for (post-treatment) inpatient and outpatient rehabilitation and exercise.

Due to its effects on outcome after surgery and other cancer treatments, and due to a possibly better motivation for later rehabilitation and even return to work, the concept of prehabilitation seems to be a modern and very important intervention to increase earlier participation of cancer patients. Nevertheless, the practicability of prehabilitation concepts remains an understandable barrier due to time restrictions in the pretreatment period and due to motivation problems in some cancer patients.

Further research is urgently needed to study the different forms of unimodal and multimodal prehabilitation approaches. This research should focus on clinical aspects, effectiveness and efficiency of the single components (of exercise alone or of the other single components of the multimodal approach), and on the comprehensive multimodal approach. Furthermore, strategies for handling of barriers should be established. It is essential to find out for which cancer patients and cancer entities prehabilitation could be feasible and beneficial. Thus, clinical research should aim to identify the patient groups who really benefit from of the cancer prehabilitation concept. After this, there should follow a widespread implementation of this quite modern strategy as relevant part of the cancer care continuum.

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Declarations

Conflict of interest The author declares that he has no conflict of interest.

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