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The use of physiotherapy and the role of physical exercise in cancer

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Abstract

After the application of oncological treatment, it is important to implement physiotherapy, the basic component of which is kinesitherapy. It is not always possible to implement the rehabilitation procedure early enough, so you should take into account the time spent in bed before starting the exercise and assess the physical performance. Research shows that the best benefits are achieved by activity undertaken 5 days a week, lasting a minimum of

30 minutes, with moderate intensity. Physical activity in the advanced stage of cancer can positively affect the physical and mental well-being, the level of fatigue experienced, and even increase the independence of the patient. The aim of using palliative procedures is primarily to control persistent and severe pain, prevent the negative effects of immobilization and provide psychological support for the patient and family members. Numerous studies also indicate that exercise can also help to reduce the risk of certain forms of cancer, and increase the survival time from the moment of diagnosis. Researchers also confirming a favorable correlation between physical effort and the quality of life of patients suffering from cancer.

Admission

In the 21st century there is an increasing number of people suffering from cancer, which every year has an advantage in mortality over other diseases of civilization. It mainly concerns the inhabitants of developed countries. In Poland, it also takes tens of thousands of people. Men suffer primarily from malignant tumors, ie: prostate, lung, stomach and rectal cancer. In turn, in women the most commonly detected is breast, cervical and stomach cancer. The incidence of cancer increases with age. On the other hand, mortality is higher among men than among women (45 000 men and 35,000 women die each year), which is caused by the nature of this disease and by the fact that men use medical services less frequently and lead a less hygienic lifestyle [1,2].

An extremely important element in the management of cancer is oncological rehabilitation. Its primary task is to recreate the opportunity for the patient to perform the activities of everyday life again and improve the mental state [3].

Oncological rehabilitation is divided into:

- prophylactic, introduced at the stage of oncological therapy counteracting side effects,
- medicated - used to reconstruct self-healing processes of the organism and
- palliative - used in the terminal stage of the disease [3].

Although it seems that the physiotherapists' activity is very limited here, because they can not use physiotherapy treatments, they still have a wide spectrum of possibilities, because they can work with the patient through movement or touch. Modern rehabilitation methods applicable to cancer diseases include music therapy or choreotherapy [3].

Physical effort in cancer

Physical activity is a drug of the 21st century. It is not only a preventive factor, but it is also used in the treatment of many cardiovascular and neoplastic diseases. In cancer, physical exercise is beneficial in the prevention of colorectal cancer and breast cancer [4].

In some cases, the lack of physical activity of a patient is a consequence of exhausting oncological treatment. Surgical treatment, radiotherapy and chemotherapy can lead to cure, but often this happens at the expense of organ damage, which can affect the daily functioning and the possibility of physical activity. In one of the studies it was proved that as many as 30% of patients struggle with such problems. After the oncological treatment, early rehabilitation is important. According to the recommendations of the ASC (American Cancer Society), moderate activity lasting a minimum of 30 minutes brings the most benefits. repeated 5 days a week. Before starting the exercise, physical fitness based on the ECOG and Karnofsky scale should be assessed, taking into account the patient's ability to perform various activities and time spent in bed [5,6].

The relationship between physical activity and the risk of breast, colon and endometrial cancer has been demonstrated. Probably exercise can help to reduce the risk of prostate and lung cancer. In the meta-analysis of Friedenreich C. M et al., Including 62 studies, in 47 of them it was shown that physical activity reduces the risk of breast cancer to 25-30% in perimenopausal women. The studies showed that women who were physically active for 5 and more hours per week had a lower risk of invasive and pre-invasive breast cancer. [6] It has also been proven that people with moderate intensity of physical activity decrease the incidence of colon cancer by 30-50% and that the risk of glandular polyps is reduced. In physical activity, in the context of colon cancer, the intensity of effort is more important than the amount of energy consumed. The total time devoted to playing sports, as well as the period of life in which sport was practiced, is also significant [4].

The Melbourne Collaborative Cohort Study (MCCS) study, in which 526 people with colorectal cancer participated, had a lower risk of developing cancer in people who regularly took physical activity, and a five-year survival period after the diagnosis of non-exercisers in comparison with people Physically active is 57% vs 71% [6].

In the HEAL study (Health, Eating, Activity, and Lifestyle Study), the annual period before the diagnosis of cancer was made up to 2 years after the treatment was analyzed. 1183 women who took part in the study were asked 20 questions about physical activity (type of activity, duration, etc.). On this basis, the examined women were divided into three groups:

physically passive, slightly more active and active in the recommended degree. The study showed that in women who increased the intensity of physical activity after the diagnosis of the disease in comparison to physically passive women, the risk of death was up to 45% lower, while those who reduced the intensity of physical activity after the diagnosis of breast cancer were almost four times greater [6].

There are also studies on the relationship between physical activity and quality of life. Such studies were carried out in the Wielkopolska Center of Oncology in Poznań, where women with breast cancer after chemotherapy were examined. The women were introduced strength and resistance exercises lasting from 45 to 50 minutes. After a short warm-up, the patients performed resistance exercises with the Thera-Band tape, followed by a 25-minute endurance training on a cycloergometer. The culmination of the training was 10-minute relaxation. These studies confirmed what has been known for a long time - regular moderate physical exercise has a positive effect on the functioning of the body [7].

The intolerance of effort is limiting the patient in his everyday life. Reduced physical activity decreases efficiency and leads to increased fatigue and worsening breathlessness. As a consequence, it leads to increased fear of physical activity [8]. In order to reduce the stress associated with everyday life and illness, breathing exercises that reduce muscle tension and allow better oxygenation of the body are used [3].

Lack of physical activity can also be socially conditioned. According to the CINDI - WHO (Countrywide Integrated Non-Context Intervention Program), in Poland, the percentage of people with good physical condition is only 15%. Studies carried out in Europe have shown that the Polish and Portuguese communities are the least physically active [6].

Palliative care

Patients suffering from advanced neoplastic disease (progressive and non-causal treatment with unfavorable prognosis) should be covered by comprehensive palliative care. Palliative care is an important component of oncological treatment and care. Its beneficial effects are also evident during the early stages of chronic and progressive diseases [9].

Palliative care is the interdisciplinary operation of a team of specialists to meet the needs of patients, as well as offering support for families and caregivers of patients. Specialized palliative care is available in a stationary form, home care, counseling and a hospital and daycare center [9].

In cancer, the occurrence of some symptoms is associated with the disease treatment process and not with the tumor itself. Some factors include fear, depression, loneliness, exacerbate symptoms of the disease, and their mastery is a key element in the treatment of advanced cancer [9,10].

Palliative interventions are used during the terminal phase of the disease. They focus primarily on eliminating complications and ensuring the highest possible comfort of life. The aim of using palliative procedures is primarily to control persistent and severe pain, prevent contractures and decubitus ulcers and provide psychological support to the patient and family members [11].

An important role in the palliative treatment of advanced cancer is communication between the patient, family and care team, as well as adapted rehabilitation and creative therapy [9].

Physical activity is also an important element in the management of advanced cancer. It can positively affect the physical and mental well-being, the level of fatigue experienced, make it easier to fall asleep and even increase the patient's independence [6].

Physiotherapy in side effects of oncological treatment.

It is necessary to implement rehabilitation when side effects occur after applying various oncological treatment methods. These side effects include: edema, osteoporotic fractures, delayed wound healing, pain, phantom discomfort, fibrosis of the muscles, limitation of mobility in the joints, reduction of muscle strength. To reduce or eliminate the above-mentioned effects we use methods such as: compression therapy, manual lymphatic drainage, drainage patient position, whirl massage, pneumatic massage (BOA), aquavibron massage, kinesiotaping, breathing and movement exercises and modern rehabilitation methods [1,3 , 12, 13].

Below, the research on physiotherapy in the most commonly occurring side effects resulting from oncological treatment, which include:

A) swelling,

B) pain,

C) fatigue.

A) Physiotherapy in edema.

Edema prevention is most often used in breast amputation patients and lymph node surgery. Then, such elements of therapy are introduced as: high limb positions using shafts and wedges, manual lymphatic drainage performed by a physiotherapist and / or masseur, self massage performed by the patient after prior instruction by a physiotherapist, aquavibron massage, limb bandaging, and movement and breathing exercises, to activate the respiratory muscles and upper limb rim. All these methods are aimed at accelerating and improving the circulation of lymph outflow from the distal parts of the body [3].

Sapuła et al. Embraced the group of 90 women after a mastectomy. During the two-week rehabilitation (outpatient), the patients had from 2 to 5 physiotherapeutic procedures from the following: manual massage and using the aquavibron apparatus, compression therapy, hydrotherapy and active and active exercises with relief of the upper limb. All patients had smaller circumferences of the limb arm after physiotherapy, and the best results were obtained by those patients whose maximum number of treatments was limited to three during the day and combined lymphatic drainage with kinesitherapy. After two weeks of rehabilitation, 53% of the surveyed women indicated that manual drainage was the most effective of all [14].

Pyszora A. et al. In his article described a man diagnosed with bladder cancer treated by transurethral resection of a tumor, in whom two years later an advanced stage of neoplastic disease within the abdominal cavity and pelvis was found. In this case, lymphoedema was localized in the shin area, and the goal of the therapy was to improve the quality of life of a patient who complained of pain in this area. Multilayered shin bandaging, lifting of lower limbs, skinning with paraffin, exercise and respiratory physiotherapy were applied in the therapy. Within a few days, the reduction of edema reached 60% in both lower extremities. As a result, the man was independent and physically active [15].

The presented studies indicate that physiotherapy is an effective method in reducing edema caused by cancer

B) Physiotherapy in pain.

Pain is not just a sensual sensation, but also an emotional experience - suffering. This is related to the nociceptive system by means of which the stimuli received by the receptors are conducted to the sensory centers in the brain [17]. Pain in medicine is a problem that has a negative impact on the treatment and recovery of the patient. In 70-80% of people in the palliative stage of treatment, although they are in the course of therapy, they feel neurogenic,

somatogenic and psychogenic pain. Such ailments intensify negative emotions leading to depression, apathy, anger and anxiety [16, 17].

There are many criteria for classifying pain, including they are divided due to:

❖ time of persistence of pain: acute pain (up to 3 months) and chronic pain (longer than 3 months), occurring continuously or recurrently,

❖ place of origin: nociceptive pain, non-nociceptive (neuropathic) pain,

❖ place of pain perception: localized, projected and generalized pain,

❖ etiological agent: pains caused by cancer, pains resulting from oncological treatment, accompanying cancer and coincidental pain.

❖ description of pain: somatic pain; bone pain and visceral pains

Simple scales were constructed to measure the intensity of pain, divided into verbal and non-verbal. The former are mainly used in pediatrics. We distinguish between scales: Visual Analogue Scale (VAS), Pain Thermometer, Number Rating Scale (NRS), Verbal Rating Scale (VRS), according to Oucher, Douleur Enfant Gustave Roussy (DEGR), Pain Evaluation Sheet (AOB) [17].

A study on how to cope with cancer in 50 hospice patients in Wrocław and the Piarist and Hospice Medicine Center in Będków indicate that almost half of those who were staying there experienced at least an average degree of intensity on the visual and analog VAS scale. This may indicate that patients under palliative care use pain as one of the strategies for coping with the disease [18].

Pharmacology is the basic means used to reduce and treat unpleasant sensations. It was incorporated by the WHO in 1986 as an inherent component of oncological therapy. Its effectiveness is noted in 85-90% of patients [19]. However, an important element is also the use of appropriate physical exercise, because systematic physical activity does not only relieve pain located within the musculoskeletal system, but also reduces the sensation of pain as a result of affecting the psyche (secretion of endorphins). Adding pharmacological treatment to rehabilitation slows down or modifies disease progression and kinesitherapy is possible through pharmacological pain management [20].

Physiotherapy is helpful in combating myofascial pain. Pyszora A et al. Describe a woman who was diagnosed with an advanced stage of breast cancer. The cause of the woman's pain was prolonged immobilization. The most intense pain was located in the knee joints, which made the patient unable to sit with her legs down. The treatment was based on

myofascial release (MFR, myofascial release) to extend the fascia, followed by kinesiology taping to restore the mobility of joints and muscles. In addition, respiratory physiotherapy was carried out. In the following days, the pain was reduced, the range of flexion in the knee joints increased. Later, there was a further reduction in pain and increased flexion within the knee joints. This allowed the patient to achieve a sitting position with legs down [15].

C) Physiotherapy in fatigue

Fatigue (CRF) is common among patients undergoing oncological treatment. It has a negative impact on the quality of life, because it is an uncomfortable symptom associated with the disease itself or its treatment. Patients often consider fatigue to be an inseparable symptom of the course of the disease and rarely admit it. Studies show that people over 65 often mention fatigue. Older people avoid talking about fatigue even with a doctor, because they often disregard this syndrome [21].

Fatigue in cancer can affect the physical or mental aspect. Most often, however, these are physical aspects such as: reduced energy level, change of lifestyle, feeling of weakness or increased need for sleep. About 1/3 complain about the psychological symptoms of CRF such as reduced motivation, feelings of sadness and nervousness. In order to reduce the feeling of fatigue in the course of a neoplastic disease, physical activation. Exercises are selected individually and take into account the patient's load, for example cardiological problems, because the existing load is not an absolute contraindication to the use of physiotherapeutic methods. The contraindication for exercise for cancer patients are parameters determined by Adamsen et al. And Dimeo et al. And they include: diastolic pressure less than 45 mm Hg and greater than 95 mm Hg, or HR above 100 / min, temperature higher than 38 ° C, infection requiring antibiotic therapy, bleeding, or platelet level below 50 G / l [16.22].

Porocka et al. Investigated the impact of exercises, among others on the level of fatigue and anxiety. The study group consisted of 9 walking patients residing in the hospice due to advanced neoplastic disease. As a result of the intervention, the researchers did not observe either a reduction in general fatigue or physical fatigue (MFI-20 subscales), but there was an improvement in mental fatigue and motivation. All patients were positive about the exercises and declared that their well-being improved [23].

End

Palliative care combined with rehabilitation is offered to chronically ill people, especially those with poor prognosis. Her main task is to improve the quality of life of patients and their families in the face of illness. Improving the quality of life does not only mean achieving the longest possible survival time, but also relies on supporting the patients in the physical, mental and spiritual spheres by applying a beneficial effect of physical exercise and physiotherapy. The patients gain energy and self-confidence through motion therapy, which in turn influences better treatment results. It is therefore important that physiotherapy is part of oncological treatment.

Palliative medicine is not only dedicated to oncological patients, although it is associated with it. Palliative medicine is not a synonym for terminal care. Many people with advanced chronic diseases could benefit from this model of care, but this is currently not practiced. It is comforting that in recent years steps have been taken to allow palliative care for patients with adverse prognosis of chronic diseases, including with COPD, degenerative diseases or in the end stage of heart failure [24]

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