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Relationship between chest pain and level of perioperative anxiety in patients with lung cancer

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ABSTRACT:

Introduction: Chest pain is one of the symptoms of lung cancer. Chest pain disrupts patient's functioning in somatic and psychic area.

Purpose: Whether the existence of chest pain affects the level of perioperative anxiety in lung cancer patients. Is there a relationship between everyday functioning due to the chest pain and the level of perioperative anxiety? Is there a relation between anxiety associated with pain and gender? What is the cause of anxiety in this group of the patiens?

Methodology: The study was conducted among 150 patients with lung cancer before the scheduled surgery. Data was collected with the use of questionnaire assessment of perioperative anxiety level in patients with lung cancer.

Results: The chest pain before the surgery was confirmed by 63 (42%) patients, in case of 87 (58%) patients it was not identified. Chest pain was in case of 48% women and 36% men. 50 (33,3%) research participants who experienced chest pain and 35 patients (23,3%) without this symptom declared experiencing perioperative anxiety. In patients with lung cancer, the correlation: between chest pain and perioperative anxiety was ($Z = -4.67$; $p < .001$); between the difficult daily functioning of pain and perioperative anxiety was ($Z = -4.72$; $p < .001$); between gender and perioperative anxiety associated with pain was ($Z = -3.24$; $p = 001$). Patients afraid of: pain (37,3%), breathing problems (24,0%), physical disability (16,0%), eating problems (12,0%) sleep disorders (9,3%), nothing (1,3%).

Conclusions: Patients with chest pain exhibited significantly higher of perioperative anxiety levels than non-symptomatic patients, as well as higher anxiety levels due to deteriorated daily functioning caused by the disorder. Women had a higher level of anxiety associated with pain than men before the surgery. Patients with lung cancer were most afraid of pain in the perioperative period.

KEYWORDS: perioperative anxiety, pain, lung cancer

INTRODUCTION

Lung cancer is the most common malignancy in men in the world and the fifth in women. About 16,000 men and 6,200 women die in Poland every year due to lung cancer [1, 2]. Pain affects more than half of patients with cancer, this symptom may occur with periodic exacerbations of ailments, which often reduces the quality of life of patients [3]. Pain in the case of lung cancer is nonspecific and diverse [4]. Some patients experience pleural pain, which is characterized by an increase in respiratory movements, has a stinging character, decreases after reduction of chest mobility. This may also apply to the chest wall, with the addition of a co-existing neuropathic component. Chest pain is associated with the presence of a tumor, metastatic changes in the process of inflammation or pulmonary embolism in the area affected by cancer [5,6]. Pain in patients with lung cancer also arises as a result of diagnostic tests and procedures (fine needle aspiration biopsy through the chest wall, pleural cavity puncture, mediastinoscopy, supraclavicular lymph node biopsy, videothoracoscopy, thoracotomy, which is associated with violation of tissue continuity within the chest) [7,8].

The feeling of anxiety of patients with lung cancer may have different faces. One of the factors that may exacerbate this type of reaction is pain [9, 10]. When the clinical condition is not satisfactory, which is associated with the experience of more and more intense symptoms associated with the disease or treatment (pain and other ailments), sometimes there are adaptation difficulties, breakdown mechanisms for dealing with challenges. One of the most frequently felt symptoms is anxiety [11]. Pain and anxiety in patients undergoing surgery are phenomena that often occur together and can interact with each other. As shown by research carried out by Nelson et al. [12], anxiety can increase the sensation of pain, while pain causes anxiety. In turn, fear of surgery may adversely affect the parameters of anesthesia, exacerbate postoperative pain and prolong the period of hospitalization. Nowicki et al. [10] therefore showed that the perioperative somatic state exerts the greatest impact on patients with lung cancer, and in particular pain, which worsens the functioning of subjects both in the somatic and mental sphere, thereby reducing their quality of life.

The aim of the study was to determine whether the occurrence of chest pain affects the level of perioperative anxiety in patients with lung cancer. Does diminished daily functioning caused by chest pain show a relationship with the level of perioperative anxiety? The additional objective of the study was to determine whether there is a relationship between the gender of patients with lung cancer and perioperative anxiety caused by pain, as well as the cause of the greatest concerns related to thoracic surgery in this group of patients.

MATERIAL AND METHODS

The study was carried out in the Department of Thoracic Surgery, General and Oncological Surgery. The study involved patients

admitted in a planned procedure for lung surgery due to a tumor. The study included the patients' own questionnaire survey: „Level of perioperative anxiety in patients with lung cancer". The study group consisted of 150 patients from 60 to 80 years of age. Patients were divided into two groups: women (75-50%) and men (75-50%). The mean age of the subjects was (M = 69), standard deviation (SD = 1.80). To assess the level of perioperative anxiety, a scale of 1-10 was used in the survey, where „1" meant the lowest possible level of anxiety and „10" the highest. To perform a qualitative analysis of data, the scale was reduced to the following three categories („definitely yes", „moderate", „no"). The study contains qualitative and quantitative data analyzes. For quantitative data that did not meet the normality of distribution, non-parametric tests were used. To compare the two groups, the Mann-Whitney U test was used.

RESULTS

63 respondents (42%) indicated chest pain, while 87 (58.0%) were not diagnosed. In the female patients' group, there were 36 (48.0%) people with chest pain and 27 (36.0%) men suffering from this disorder. The group which did not report this symptom comprised of 39 (52.0%) female patients and 48 (64.0%) male patients. The presence of perioperative anxiety was checked in patients who reported chest pain and those without this symptom. It was noted that the presence of perioperative anxiety was confirmed by 50 (33.3%) of those experiencing chest pain and 35 (23.3%) without the symptom. In subjects with chest pain, 9 (6.0%) experienced moderate anxiety and 4 (2.7%) low. In patients with discomfort, moderate and low levels of anxiety were equally felt by 26 (17.3%). The Mann-Whitney U test was carried out to verify whether people with chest pain differ significantly in perioperative anxiety (measured on a scale of 1-10) from people without chest pain. Basic statistics for the variables of chest pain and perioperative anxiety amounted to, for those confirming the symptom: N = 63, M = 7.1905, SD = 2.38177, SE = 0.30007; for people without the symptom: N = 87, M = 4.6322, SD = 3.13686, SE = 0.33631. The Mann-Whitney U test showed that patients with chest pain have significantly higher perioperative anxiety than those without chest pain (Z = -4.67, p <.001). The relationship between chest pain and perioperative anxiety is shown in Figure 1. Due to the fact that the patients in the study group reported somatic complaints, mainly pain, including chest pain, it was checked whether these ailments impeded their daily functioning. For 114 (76.0%) patients, somatic pain was not an obstacle to everyday functioning, for 36 (24%), it was an aggravating factor. In the group of respondents, 25 (33.3%) women admitted that this was a serious problem, whereas it was treated as an inconvenience by 11 (14.7%) men. In the group of patients for whom their health status was not a burden, there were 50 (66.7%) women and 64 (85.3%) men. A group of examined persons was checked for the presence of perioperative anxiety in connection with the hindering of everyday functioning as a result of pain symptoms. It turned out that in the group of 36 (24.0%) subjects with a worse level of functioning on a daily basis, there were 31 (20.7%) respondents definitively declaring the presence of perioperative anxiety, in the group experiencing anxiety at a moderate level, there were 4 (2.7%) people, while it did not occur in 1 person at all. In the group without burdens, 54 (36.0%) people definitely reported anxiety, at a moderate level - 31 (20.7%) patients, and comparatively 29 (19.3%) at a low level. The Mann-Whitney U test was carried out to verify whether people whose pain affects

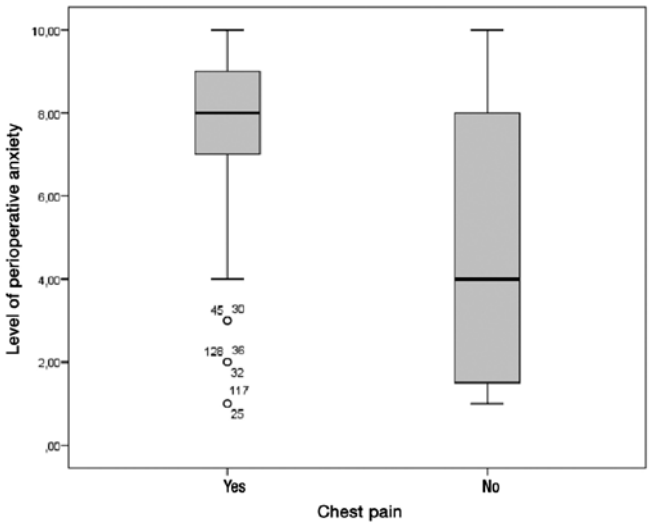

Fig. 1. Correlation between chest pain and perioperative anxiety.

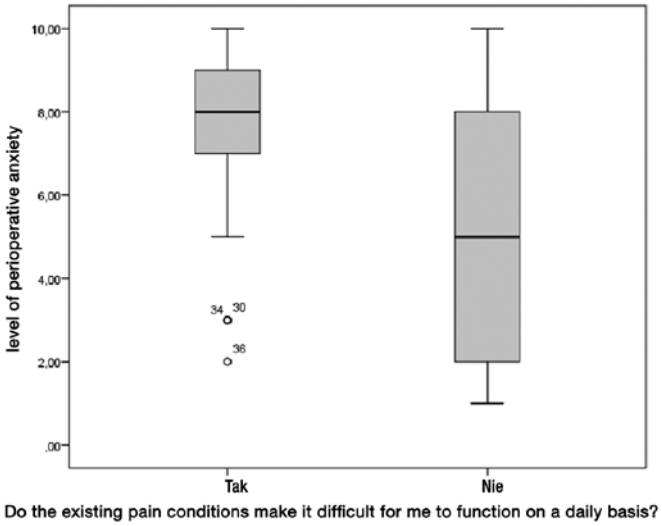

Fig. 2. Correlation between worsened everyday functioning caused by pain syndrome and the level of perioperative anxiety.

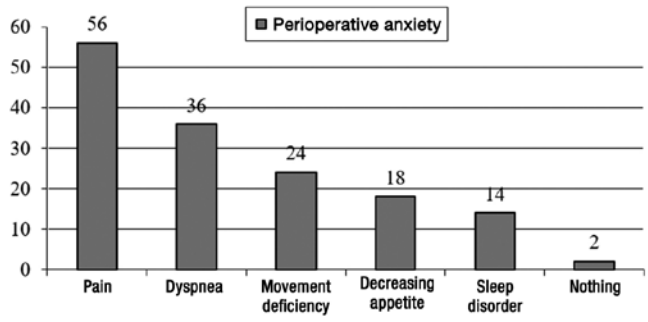

Fig. 3. Cause of perioperative anxiety in patients with lung cancer.

their daily functioning differ significantly in perioperative anxiety (measured on a scale of 1-10) from people without difficulty in terms of everyday functioning. Basic statistics for the variables „obstructing everyday functioning due to pain" and „perioperative anxiety" for those with impaired functioning amounted to: N = 36, M = 7.6389, SD = 2.08605, SE = 0.34767; for people without difficulties: N = 114, M = 5.0965, SD = 3.13126, SE = 0.29327. The Mann-Whitney U test showed that people whose pain symptoms impede daily functioning are characterized by significantly higher

perioperative anxiety than people whose health does not affect daily functioning (Z = -4.72, p <.001), as illustrated in Figure 2. The study also checked the somatic symptoms that are the most common cause of perioperative anxiety. For 56 (37.3%) of the subjects, the greatest cause of concern related to the planned procedure was the introduction of post-operative pain or intensification of this symptom as a result of surgical intervention; 36 (24.0%) patients were of the opinion that dyspnea or breathing problems may be the most disturbing, for 24 (16.0%) of the respondents, physical disability raised the most doubts. The group of patients who thought that reducing appetite may be problematic comprised of 18 (12.0%) respondents. Sleep disorders were indicated by 14 (9.3%) patients, while 2 (1.3%) persons did not have specific concerns about somatic symptoms due to surgical intervention (Fig. 3). The group of those most worried about pain comprised of 41 (27.3%) women and 15 (10%) men. To test the relationship between the gender of the subjects and the level of perioperative anxiety associated with pain, Mann-Whitney U tests for independent trials were carried out. Basic statistics for gender variables and the level of perioperative anxiety associated with pain for women amounted to: N = 75, M = 6.4533, SD = 2.94221, SE = 0.33974; for men: N = 75, M = 4.9600, SD = 3.10379, SE = 0.35839. It has been shown that women have a significantly higher level of perioperative anxiety in relation to pain than men (Z = -3.24; p = 001) (Fig. 4).

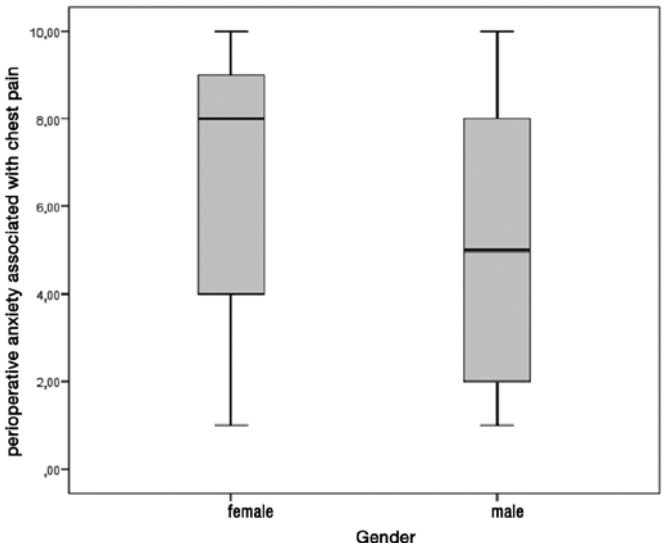

Fig. 4. Correlation between sex and perioperative anxiety associated with chest pain

Tab. I. Survey to assess the level of perioperative anxiety in patients with lung cancer.

1. Gender	a) F b) M
2. Age	a) 60-70 b)71-80
3. Order of surgical procedure	a) first b) next
4. Accompanying diseases in interview	a) yes b)no
5. Presence of pain in the chest?	a) yes b)no
6. Are you currently feeling fear?	a) yes b)no
7. On a scale of 1-10, please mark the level on which you feel fear	1 2 3 4 5 6 7 8 9 10
8. What symptoms do you fear most regarding surgery?	a) the occurrence of pain or its severity b) dyspnea c) motion disability d) sleep disorders / appetite disorders / nothing
9. Do you know the diagnosis of the disease?	a) yes b)no
10. Do you have any bad experience related to surgery?	a) yes b)no
11. Are you receiving support from the family?	a) yes b)no
12. Has a psychologist consultation taken place?	a) yes b)no
13. Are you satisfied with the perioperative care?	a) yes b)no
14. Do pain and other symptoms make your daily functioning difficult?	a) yes b)no
15. Which symptoms make your daily activities the most difficult for you?	a) pain b) dyspnea c) movement disability d) poorer exercise tolerance
16. Do you feel anxiety with regard to the pain or the possibility of its aggravation as a result of surgery?	a) yes b)no

DISCUSSION

Perioperative anxiety is a common phenomenon among oncological patients. It results both from the necessity of surgical intervention with an uncertain result as well as the disease itself, which is assessed by the society as chronic, threatening and incurable [3, 13]. The surgery is a source of emotional tension for patients, it results from the awareness that intervention in the body carries a risk, but if the patient is also accompanied by symptoms such as pain, the patient is less able to adapt to the disease and may experience fear [14]. The results of the conducted research indicate that pain, including chest pain, occurred in a smaller group of patients with lung cancer before the planned surgery, which corresponds to a study conducted by other authors who indicate that chest pain is not the dominant symptom in lung cancer and occurs only in about 15% - 20% of patients, and its severity increases with the severity of the disease [2]. The vast majority of patients experiencing chest pain was characterized by a significantly higher level of perioperative anxiety in relation to subjects who did not suffer from pain. Other authors also claim that anxiety and pain are strongly related to each other as they constitute an alarm signal and worsen the functioning of the individual in many aspects [15]. Pain and anxiety in patients undergoing surgery are phenomena that often occur together and can interact with each other. As shown by research by Nelson et al. [12], anxiety can increase the sensation of pain, while pain causes anxiety. Anxiety during the course of a malignant disease may increase according to Salmon [16] due to the occurrence of pain symptoms resulting from the tumor itself, progression (metastasis, tumor invasion, wasting) or the treatment itself. Anxiety resulting from pain is in turn, according to Basińska [17], a phenomenon common in patients with lung cancer, but also fear of it, heightened by the memories and experiences of the patient. What is important in that case is not only proper medical care, but also psychological support, the use of other, non-pharmacological methods of dealing with pain. The occurrence of chronic or poorly treated pain may reduce the level of motivation for further struggle with the disease, increase anxiety and sense of loss of control over your body [6].

Patients with lung cancer in the perioperative period were characterized by a significantly higher level of anxiety due to the possibility of experiencing pain, as well as the severity of this symptom as a result of surgery, in comparison to male subjects. They also sho-

wed more worries about treatment, and somatic symptoms were a great difficulty for them in everyday functioning. This correlates with the observations and research of other authors, such as Kępiński [18] and Sęk [19], confirming a higher anxiety rate among women, as well as greater severity of such attitudes towards cancer and somatic symptoms associated with it, such as: anxiety preoccupation or emotional distress.

If the pain sensation is intense and long-lasting, the symptom loses the function of a warning and defense factor and becomes a persistent problem that aggravates the functioning of the entity everyday [8]. The study drew attention to the fact of worsened daily functioning of patients suffering from lung cancer, somatic ailments, including pain, which significantly contributed to the increase in perioperative anxiety. This aspect was previously indicated by other authors, such as Murray [20], who emphasized the relationship between decreased daily fitness and mental well-being in patients with lung cancer. Anxiety in patients with lung cancer according to Sell [21] was also associated with a deterioration of the quality of life, the occurrence of pain symptoms, poorer endurance and resistance to effort, and thus lack of efficiency in everyday life. Patients with lung cancer in the perioperative period had a clearly defined position on anxiety-related factors associated with this form of treatment. They primarily pointed to pain as the main factor causing anxiety and fears associated with further functioning during convalescence. Among the reasons, unlike other authors, who give priority to the fear of „not being awakened" after surgery in the first place; followed by the danger of awakening during the procedure, in the third place, there was fear of experiencing pain or other symptoms [22]. Kulpa and Stypuła-Ciuba [23] have proven that reducing pain contributes to improving mental well-being and reducing anxiety in patients with cancer, it also facilitates self-acceptance as a patient and better preparation for treatment. Therefore, it was considered appropriate to broaden care for the patient sensing pain with psychological care in order to improve the quality of life indirectly to reduce the perceived severity of cancer pain. A high level of anxiety in perioperative care is a significant difficulty, not only for emotional but also medical reasons, because it contributes to complications and thus, a negative assessment of the quality of perioperative care [24].

CONCLUSIONS

The study confirmed that chest pain contributes to the increase in anxiety in the perioperative period in patients with lung cancer, and the diminished daily functioning caused by this symptom results in increased anxiety reactions and prolonged adaptation to cancer. Contrary to earlier assumptions, it turned out that the possibility of pain or its severity was considered by most patients as the primary cause of perioperative anxiety. This phenomenon was observed especially in patients who were characterized by a higher level of anxiety, worse psychological functioning before surgery and showed more fears related to the somatic sphere than male patients.

The results of the conducted research indicate the need to provide special care to patients with chest pain associated with lung cancer, which can significantly reduce the mental and physical functioning of patients, as well as worsen the process of adaptation to the disease and its treatment. Despite the fact that chest pain is not the dominant symptom in lung cancer, its occurrence influences the increase of anxiety level and worsens psychological preparation of patients for surgery. The goal of the treatment team should be to consider all possible causes of perioperative anxiety, including chest pain and appropriate measures to properly reduce the symptom and reduce anxiety to the level that allows the patient to function during perioperative hospitalization.

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