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THE IMPORTANCE OF TIMELY AND REGULAR ASSESSMENT OF PAIN AFTER BREAST CANCER SURGERY

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Summary

Breast cancer is one of the most prevalent cancers in the world amongst women. Incidence of breast cancer in Croatia, in 2012 was 2227. The crude incidence rat for Croatia was 100,4 (on 100 000 persons) and standardized incidence rate for the world population was 53,7 (1,2).

As a consequence of advancements in available diagnostic procedures and treatments, the rate of survival is increasing, hence it is expected that the population susceptible to pain as a complication would also increase (3). The persistent pain causes a negative physical and psyhosocial impact on patient's life (3,4). Early identification and accurate assessment of pain after breast cancer surgery includes: physicians and nurses in the ICU, surgical and oncological departments, general practitioners, psychiatrists, neurologists, palliative care teams and family members (5). In this review we presented results of early and regular assessment of pain intensity and detection of factors involved in the emergence and spread of pain that occurs after breast cancer surgery (6,7).

Herein, a modified questionnaire about pain is described as used in our clinical practice, based on which a combination of analgesic therapy is applied and a more satisfactory response in patients treated for breast cancer is obtained.

KEY WORDS: *breast cancer, epidemiology, breast cancer surgery, Pain Questionnaire, clinical practice, pain assessment*

VAŽNOST PRAVOVREMENE I REDOVITE PROCJENE BOLI NAKON OPERACIJE RAKA DOJKE

Sažetak

Rak dojke je jedan od najčešćih oblika raka u svijetu među ženama. Incidencija raka dojke u Hrvatskoj, u 2012. godini, je 2227 slučaja. Stopa učestalosti za Hrvatsku iznosila je 100,4 (na 100 000 osoba), a standardizirana učestalost za svjetsku populaciju je 53,7 (1,2).

Kao posljedica napretka u dostupnoj dijagnostici i liječenju, stopa preživljavanja oboljelih je u porastu te se očekuje porast broja stanovništva s komplikacijama boli (3). Stalna bol ima negativne fizičke i psihosocijalne učinke na život oboljelih (3,4). Rano prepoznavanje i točna procjena boli, nakon operacije raka dojke, uključuje: liječnike i medicinske sestre u intenzivnim jedinicama, kirurškim i onkološkim odjelima; liječnika obiteljske medicine, psihijatra, neurologa, tim palijativne skrbi i članove obitelji (5).

U ovom preglednom članku želimo prikazati važnost rane i redovite procjene kvalitete i jačine boli kao i otkrivanje čimbenika odgovornih za nastanak i širenje boli koja nastaje nakon operacije raka dojke (6,7). Također smo prikazali primjer modificiranog upitnika o boli koji smo koristili u našoj kliničkoj praksi, prema kojemu smo primjenili kombinaciju analgetske terapije i dobili zadovoljavajući odgovor u bolesnica operiranih od karcinoma dojke.

KLJUČNE RIJEČI: *rak dojke, operacija raka dojke, upitnik za bol, klinička praksa, procjena boli*

INTRODUCTION

Persistent pain and sensory disturbances following surgical treatment for breast cancer is a significant clinical problem. The pathogenic mechanisms are complex and may be related to patient characteristics, surgical technique, and adjuvant therapy (8,9).

In the breast cancer, the pathogenic mechanisms are multiple, including nerve damage related to surgical technique resulting in risk of intercostobrachial neuralgia, neuroma pain or phantom breast pain (8). Different types of sensory disturbances (eg. allodynia, hyperpathia, after sensations, burning or sensory loss) are sequelae of other surgical procedures and may be an important part of the pain characteristics in breast cancer (9). Postsurgery pain is a common problem and often unnoticed in health care. If we do not notice it on time and treat correctly, it can predispose to creating persistant pain through multiple mechanisms and it may sensitive the pain system facilitating the development of chronic pain after new injury.

FACTORS ASSOCIATED WITH PAIN INTENSITY

Age and treatment modalities: The most important determinant of persistent pain and sensory disturbances was younger age (<40 years), although age was not related to the severity of the pain reported. The observed association between chronic pain and chemotherapy could be due to age, because younger women more often receive chemotherapy. The radiotherapy was an independent and significant risk factor for reporting pain, but the extent of the radiation field did not influence to it. In the future, localized intraoperative radiotherapy may be a way to reduce persistent pain related with radiotherapy due to better defining anatomic application (2,7,9).

Size of surgical area: Pain was reported most frequently in *the area of the breast*. The frequency appeared independent of type of breast surgery, although women who underwent mastectomy reported slightly but significantly more severe pain than women undergoing breast conserving surgery (BCS). Chronic pain after breast cancer surgery and adjuvant therapy may predominantly be characterized as a neuropathic pain state and probably related to intraoperative injury of the intercostal-brachial nerve (15–17). Persistent pain in the surgical area after breast cancer surgical treatment is a clinically significant problem in approximately 25% to 50% of patients. Although BCS and sentinel node dissection have reduced complaints, future strategies for further improvement should include nerve-sparing axillary dissection and attention to patients with other chronic pain symptoms (10,12).

Psychophysical status, preoperative breast pain and acute postoperative pain intensity are well-known risk factors related with a persistent postsurgical pain (9,11,12,15,19). Also postsurgical pain state may be related with existence of other pain syndromes (headache, low back pain), which may suggest that a preoperative general pain hypersensitivity due to psychosocial or genetic factors may be important pathogenic mechanisms and therefore have to be included in preventive and therapeutic trials in the future.

OBJECTIVES AND METHODS

To examine prevalence of breast cancer pain and factors associated with persistent pain after surgical treatment we searched ScienceDirect, PubMed, PubMed Health, ScienceDirect and MEDLINE. Available articles and data include an estimate of severity of pain and the factors that are responsible for its emergence, expansion and maintenance (9,10,12,17).

However, almost all information is retrospective based on questionnaires, often from single centers or small cohorts, not allowing sufficient analyses of the many risk factors. In addition, surgical principles of treatment have changed in recent years, including more breast-conserving surgery (BCS) and use of the sentinel node technique, and principles for radiotherapy and chemotherapy have been adjusted to more recent scientific data, thereby limiting interpretation of previous studies except for an agreement on persistent pain being a significant clinical problem (13,15-18).

The most frequently used Questionnaires:

(i) Modified Post-operative Pain Questionnaire.

A modified version of the Post-operative Pain Questionnaire (the original of which was

used to examine long-term postthoracotomy pain) was used to assess postsurgical pain in the region of the axilla. This 12-item instrument solicits information about the presence and absence of postoperative pain and discomfort, its intensity, and its functional significance throughout the post-ALND time period.

(ii) Pain Disability Index.

The Pain Disability Index (PDI) was used to determine the extent to which ALND-related pain and discomfort interferes with the following seven life areas: family/home responsibility, recreation, social activity, self-care, life-support activity, sexual activity, and occupation (28).

(iii) Short-form McGill Pain Questionnaire:

Like the McGill Pain Questionnaire, the Short-form McGill Pain Questionnaire (SF-MPQ) measures quantitative and qualitative experiences of pain. It is composed of sensory and affective pain scales, a Present Pain Intensity (PPI) scale, and a visual analog pain scale. The SF-MPQ correlates very highly with the pain indices of the long form in patient populations, including cancer patients (30).

(iv) Quality of Life Questionnaire.

The European Organization for Research and Treatment of Cancer Quality of Life Questionnaire is an internationally recognized instrument for the assessment of quality of life in cancer patients. The instrument is composed of five functional scales (physical, role, cognitive, emotional, and social), three symptom scales (fatigue, pain, and nausea and vomiting), a global quality of life scale, and six single items that measure dyspnea, sleep disturbance, appetite loss, constipation, diarrhea, and financial impact. Psychometric validation of this questionnaire has previously been reported, and the instrument has been used to identify meaningful changes in quality of life over time. The global quality of life scale correlates significantly and substantially with all the functional and symptom scales. For the present sample, the correlations between the global quality of life scale and the functional and symptom scales were all statistically significant ($P < .001$) (29).

(v) Mental Health Inventory

The Mental Health Inventory measures symptoms of psychological distress and well-being along the following five dimensions: anxiety, depression, loss of behavioral/emotional control, positive effect, and interpersonal ties. Reliability of the Mental Health Inventory is very high ($r = .96$) (5).

The questionnaire, which we use at our institution is simplified version of McGill's questionnaire about pain. It is slightly modified according to the needs and requests of the treatment that is carried out in our Clinic. Questions and pictures in our questionnaire are easy to use. This is understandable for most patients and giving a realistic assessment of the qualitative and quantitative components of pain at any time during treatment. This form of the questionnaire would be suitable for nurses and doctors in surgical, oncology departments, anesthesiologists in clinic for pain and other members involved in the treatment and care of the patient with cancer (family doctors, psychologists, members of the palliative care and family).

In this questionnaire *the area of the breast* is defined as the operated breast area or the area from which the breast was removed.

To determine the prevalence of symptoms for each major topic, dichotomous yes or no questions were used. Regarding pain and sensory disturbances, the women were asked systematically to address 4 specific regions of symptoms:

1. area of the breast (defined as either the affected breast or the area from which the breast was removed), 2. axilla, 3. arm, and 4. side of the body, rating pain severity and frequency in each region.

To estimate severity of pain, a numeric rating scale from 0 to 10 scores was used in which 0 indicated no pain and 10 indicated worst imaginable pain (13,14). For the reporting of results regarding severity of pain, scores of 1 to 3 were categorized as light pain, scores of 4 to 6 as moderate pain, and scores of 7 to 10 as severe pain. Worst pain was defined as the highest pain score of the 4 regional pain scores.

The frequency of symptoms was assessed by a 3-point verbal categorical scale: 1. every day or almost every day, 2. 1 to 3 days a week, or 3. more rarely. Questions were asked about physician visits due to: pain in the operated region, use of analgesics, other treatment for pain in the affected region, or pain in other locations (e.g., low back pain, headache).

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QUESTIONNAIRE FOR PAIN

(in breast surgery)

We all know what pain is, we all have experienced it. It is sometimes invisible, sometimes unbearable. In the operating area pain can occur after any surgery. Therefore, the way you describe your pain and variety of information that you provide, can improve the treatment of pain and relief of gaining the control of your pain. Surgery may not be such an unpleasant and painful experience!
Please read and complete this questionnaire. If you now feel the pain, tell your doctor or nurse who will try to remove or alleviate it.
We want the surgery and treatment in our hospital to be as pleasant as possible for you.

Name ..... Surname .....

Date of birth .....

Place of residence ..... Street .....

Phone .....

Height .....cm Weight.....kg

Medications you are taking .....

.....

Allergies .....

Please write your remarks, comments and suggestions

.....

.....

Date of completing questionnaire .....

How would you rate your pain NOW in this moment?

Circle the rating. 0 = no pain, 10 = maximum pain imaginable.

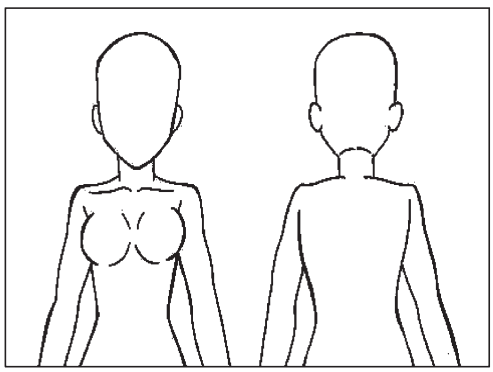
0	1	2	3	4	5	6	7	8	9	10

How would you describe your pain, whichdescription best fits?

Circle the answer that applies to you.

a) no pain	b) weak pain	c) unconfortable pain	d) strong pain	e) terible pain	f) unbereable pain

IF THE ANSWER IS 0 (zero) AND NO PAIN,GO TO QUESTION 7.



The focus of the strongest pain mark with X in the image

Does the pain is spreadingon the other part of body?

(circle the answer)

YES **NO**

If yes, please tick the arrow direction of the pain

1. When the pain began?.....

.....

2. Did it start suddenly or gradually? (circle the answer).

a) suddenly b) gradually

3. The pain occurs in: (circle the answer)

a) Movement or position changes b) coughing c) eating d) it doesn't occur

4. The pain gets worse: (circle the answer)

a) Movement or position changes b) coughing c) eating d) It doesn't worsening

5. Do you feel relief from pain at: (circle the answer)

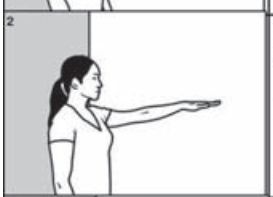
a) resting b) sleeping c) changing of the body position

d) sitting e) lying f) no pain relief

Mark with an X how strong do you feel a certain kind of pain:				
Kind of pain	**I don't feel**	**Poorly**	**Moderately**	**Intesively**
1. beating				
2. radiant				
3. stabling				
4. sharp				
5. crampy				
6. caustic				
7. thumb				
8. painful				
9. heavy				
10. gentle				
11. bursting				
12. exhaustin				
13. torturous				
14. frightening				
15. punishing				

7. Have you ever (before today) used some of the following treatments for pain relief:			**Whether the treatment was helpful?**	
Circle Yes or No for each category:			Circle Yes or No:	
a) analgetics (painkillers)	Yes	No	Yes	No
b) sedatives (calm medication)	Yes	No	Yes	No
c) antidepressants (help to alleviate depression)	Yes	No	Yes	No
d) hypnotics (for sleep inducing)	Yes	No	Yes	No
e) other medications	Yes	No	Yes	No
f) alcohol	Yes	No	Yes	No
g) physiotherapy (massage, heat, exercise)	Yes	No	Yes	No
h) surgical treatment	Yes	No	Yes	No
i) acupunkture	Yes	No	Yes	No
j) biofeedback	Yes	No	Yes	No

Please rate your pain to movement. Follow our instructions and rate the pain, for EACH position, grade 0-10. 0 = no pain , 10 = the worst imaginable pain. *If the movement is painful, do not run the whole movement, but raise your hand as you can.
Did you perform the full movement? Circle Yes or No next to the picture.

	Stand up straight or sit comfortably. Put your hands to the body. Raiting : .....
	Raise your hand sideways in a horizontal position. The palm is facing up. Raiting : ..... Did you perform complete movement?
	Raise your hand sideways high in the vertical position. Raiting : ..... *Did you perform complete movement? Yes No
	Stand up straight or sit comfortably. The arms are at your sides. Raiting: .....
	Raise your hand in front of you in the horizontal position. The palm is facing down Raiting: *Did you perform complete movement? Yes No
	Raise your hand in front, high in the vertical position Raiting: *Did you perform complete movement? Yes No

Please rate the quality of pain control in our institution.										
Circle the grade: 0 = worst pain control, 10 = excellent pain control										
0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**

Please rate your satisfaction with pain control in our institution

Circle the answer that applies to you.

a) very satisfied	**b) somewhat satisfied**	**c) neither satisfied nor dissatisfied**	**d) somewhat unsatisfied**	**e) quite unsatisfied**

With kind permission L. Stefančić; A. Šantić at all. Modified Pain Questionnaire in the breast cancer surgery. Department of Anesthesiology, Reanimatology and Intensive care, University Hospital for Tumors, Zagreb, Croatia, 2010. (modif. 2014.)

The study included 121 patients who underwent mastectomy with axillary lymph node dissection due to a cancer. All patients filled out questionnaire about the pain that has been modified according to our criteria and the analgesic treatment (Figure 1) during preoperative examination. For the treatment of postoperative pain on the day of the surgery all women have received NSAR drugs i.v. (diclofenak) about fifteen minutes before the end, and twelve hours after the completion of surgery. Eight hours after the procedure they received opioid analgetics i.v. (tramadol). Second postoperative day therapy was continued orally. We monitored pain intensity at rest and in motion for 48 hours postoperatively in all patients. The intensity of pain was measured using the visual analogue numerical (VAS) scale. The additional requested or complementary analgesic therapy that was applied to the surgical wards was also recorded. With protocol for analgesia which we use at our institution and application of pre-emptive analgesia and analgesia on demand, according to the results obtained from the modified questionnaire about pain, we achieved satisfactory control of early postoperative pain in majority of patients. Only 11 of the 121 patients asked for additional analgesic therapy. There were no statistically significant difference with regards to age.

DISCUSSION

Pain is a multifactorial experience, not just a sensation. Emotion, perception and past experience all affect an individual's response to noxious stimuli. Improved postoperative pain control through innovation and creativity may improve compliance, ease of delivery, reduce length of hospital stay and improve patient satisfaction. Patient education, early diagnosis of symptoms and aggressive treatment of pain using an integrative approach, combining pharmacotherapy as well as complementary technique seem to be a good strategy to control the pain at different disease stages (3,4,11,12).

Of the many questionnaires which were used in assessing intensity and quality of pain, only a few, have been used for a long time and were widely accepted (28,29,30).

Our intention was to create a simple questionnaire to assess pain in women treated for breast cancer which would include qualitative and quantitative indicators of pain and its origin. The questionnaire was designed to detect the occurrence of acute pain early and predict its progression, as well as to detect signs of deterioration of chronic pain (acute exacerbation). The questionnaire should be accessible and available to everyone involved in the treatment of cancer patient, adapted to intellectual and cultural differences (6,7,10,14). In our case the population is rather homogenous and no difficulties with interpretation were recognised.

The compliance and good overall pain control we detected in preliminary results of our study stressed another point: improved communication with patients, members of the palliative team and the family, ensured regular monitoring of the course of treatment which might be the reason for improved pain control.

CONCLUSION

Our intention was to assess the effect of prescribed analgesic therapy based on the modified pain questionnaire in the postoperative period, and identify early indicators of deterioration in underlying disease or complications operational or other medical treatment. When creating the modified questionnaire we included factors affecting pain modalities in early postoperative period, in order to prevent amplification of pain and the occurrence of pathological pain (21,23,24,26). We also achieved greater satisfaction and involvement of patients in the course of future treatment.

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