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PREDICTORS OF ACUTE POSTOPERATIVE PAIN IN PATIENTS WITH BREAST CANCER

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Summary

To date, modern medicine does not have reliable tools for objectifying and measuring pain. In order to avoid the development of chronic pain, we must effectively treat intraoperative and postoperative acute pain. In this prospective study, we wanted to estimate whether and to what extent algometer and PSQ (Pain Sensitivity Questionnaire) and CSQ (Coping Strategies Questionnaire) predict the intensity and strength of postoperative pain. Accordingly, we wanted to adjust the analgesia protocol. The study was conducted from February to April 2019, at the University Hospital for Tumors in Zagreb, and included 100 patients who were admitted to the hospital for breast cancer surgery. Preoperatively all patients completed PSQ and CSQ questionnaires and pain sensitivity was measured with the algometer. The same analgesic protocol was applied to all patients. The pain was measured postoperatively by NRS (numeric rating scale) 2, 6, 12, 18, 24, 48 and 72 hours after the operation.

According to the obtained results, the patients were grouped into the group of slightly sensitive, medium sensitive, or very sensitive. Correlation between PSQ and NRS was statistically significant in the group of very sensitive patients. Research has shown that algometer can identify very sensitive patients and enables planning the analgesic protocol prior the operation. We can conclude that the analgesic protocol applied during the study was successful in preventing postoperative pain.

KEYWORDS: *pain, breast cancer, algometry, analgesia*

INTRODUCTION

Breast cancer is the most common site of cancer in women in Croatia with a high mortality rate(1). In the last twenty years, the incidence has been increasing, but so has survival. One of the most common treatment options is surgery. We

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Table 1.

Worksheet for recording results

Name and surname					
Type of surgery					
Telephone number					
Adress					
Algometer 1. measurement					
Algometer 2. measurement					
Algometer 3. measurement					
Algometer 4. measurement					
Algometer 5. measurement					
Algometer 6. measurement					
Algometer 7. measurement					
Algometer 8. measurement					
Algometer 9. measurement					
STAI TEST RESULTS					
PSQ points					
CSQ points					
GENERAL ANAESTHESIA	PROPOFOL 2 MG/KG, FENTANYL, SEVOFLURANE				
		static	dynamic	analgesic as needed	
VAS static/dynamic after 2 hours					
VAS static/dynamic after 6 hours					
VAS static/dynamic after 12 hours					
VAS static/dynamic after 18 hours					
VAS static/dynamic after 24 hours					
VAS static/dynamic after 48 hours					
VAS static/dynamic after 72 hours					
PONV 0. day		YES	NO		
PONV 1. day		YES	NO		
Satisfaction of analgesia					
0. day	worse than expected	better than expected		as expected	significantly better	significantly worse
1. day	worse than expected	better than expected		as expected	significantly better	significantly worse
2.day	worse than expected	better than expected		as expected	significantly better	significantly worse

can classify acute postoperative pain after breast surgery as medium intensity and duration. The effective therapy of acute postoperative pain prevents the occurrence of chronic pain, accelerates the healing process, reduces the recovery process and have a positive effect on the mental state of the patient. Furthermore, effective analgesia reduces the stressful experience, immunosuppression, catabolism, cardiovascular problems and dysrhythmias.

Postoperative pain is a subjective experience and the intensity of pain is different in different patients after similar operations. Considering different perceptions of the pain, it would be advis-

Table 2.

Pain Sensitivity Questionnaire (PSQ)

How painful would that be for you? 0 = not at all, 10 = most severe pain painful imaginable
1. Imagine you bump your shin badly on a hard edge, for example, on the edge of a glass coffee table. 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
2. Imagine you burn your tongue on a very hot drink. 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
3. Imagine your muscles are slightly sore as the result of physical activity. 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
4. Imagine you trap your finger in a drawer. 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
5. Imagine you take a shower with lukewarm water. 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
6. Imagine you have mild sunburn on your shoulders. 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
7. Imagine you grazed your knee falling off your bicycle. 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
8. Imagine you accidentally bite your tongue or cheek badly while eating. 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
9. Imagine walking across a cool tiled floor with bare feet. 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
10. Imagine you have a minor cut on your finger and inadvertently get lemon juice in the wound. 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
11. Imagine you prick your fingertip on the thorn of a rose. 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
12. Imagine you stick your bare hands in the snow for a couple of minutes or bring your hands in contact with snow for some time, for example, while making snowballs. 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
13. Imagine you shake hands with someone who has a normal grip. 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
14. Imagine you shake hands with someone who has a very strong grip. 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
15. Imagine you pick up a hot pot by inadvertently grabbing its equally hot handles. 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
16. Imagine you are wearing sandals and someone with heavy boots steps on your foot. 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10
17. Imagine you bump your elbow on the edge of a table ("funny bone"). 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10

able to preoperatively estimate the pain threshold and to adapt postoperative analgesia to specific patients.

The aim of this research was to establish the value of the PSQ (Pain Sensitivity Questionnaire) and CSQ (Coping Strategies Questionnaire) and the results of algometry in predicting the intensity of postoperative pain. Furthermore, we intended to check the success of the applied analgesic protocol.

MATERIALS AND METHODS

We carried out a prospective study, which was approved by Ethical committee of Sestre milosrdnice University Hospital Center, Zagreb, Croatia. The approval number was EP-2823/19-5. It included hundred patients planning for breast surgery; breast segmentectomy with axilla dissection or breast ablation in University Hospital for Tumors, Sestre milosrdnice University Hospital Center Zagreb from February to April 2019.

Two patients were excluded due to more extensive surgery, and two withdrew participation. The criteria for inclusion in the study were patients ASA I or ASA II (classification of American Society of Anaesthesiologists) with planned minor surgical procedures as breast segmentectomy with axilla dissection or breast ablation. Patients in whom a more extensive operation was planned or a more extensive procedure (reconstruction) was performed during the operation were excluded from the study. The total number was ninety-six. We continuously recorded the obtained research results on separate sheet (Table 1).

For the preoperative assessment of individual sensitivity to the pain, we perform several methods. First, we used algometer Wagner FPX Pain Test™. Algometry attempts to objectify sensitivity to pain and give us numerical results. We measure preoperative pain sensitivity by pressing on the surface of nail of the thumb, index and middle finger three times on one hand and we got 9 values and took mean value for every patient. Algometry were applied only once preoperatively. The data obtained with the algometry were expressed in N/cm2. According to the obtained values, we grouped patients into three categories: a slightly sensitive (< 60 N/cm^2), moderately sensitive (61-90 N/cm^2) and a very sensitive (> 91 N/cm^2).

For the attitudes of pain and pain coping mechanisms we applied questionnaires: Pain Sensitivity Questionnaire (PSQ) and Coping Strategies Questionnaire (CSQ)(2,3). PSQ offers a variety of everyday situations for which respondents have to estimate how painful that situation would

Table 3.

The Coping Strategies Questionnaire (CSQ)

1.	I try to feel distant from the pain, almost as if it is part of someone else's body	0	1	2	3	4	5	6
2.	I'm trying to think of something pleasant	0	1	2	3	4	5	6
3.	It's terrible and I don't think it will ever get better	0	1	2	3	4	5	6
4.	I tell myself to be brave and continue despite the pain	0	1	2	3	4	5	6
5.	I tell myself that I can overcome the pain	0	1	2	3	4	5	6
6.	It's terrible and I feel the pain getting the better of me	0	1	2	3	4	5	6
7.	I don't think my life is worth living	0	1	2	3	4	5	6
8.	I pray to God it doesn't last long	0	1	2	3	4	5	6
9.	I try not to think of pain as a part of my body	0	1	2	3	4	5	6
10.	I don't mean pain	0	1	2	3	4	5	6
11.	I tell myself that pain should not stop me from doing what I need to do	0	1	2	3	4	5	6
12.	I don't pay attention to the pain	0	1	2	3	4	5	6
13.	I pretend there is no pain	0	1	2	3	4	5	6
14.	I constantly worry about whether the pain will stop	0	1	2	3	4	5	6
15.	I recall past pleasant experiences	0	1	2	3	4	5	6
16.	I think about the people whose company I love	0	1	2	3	4	5	6
17.	I pray for the pain stop	0	1	2	3	4	5	6
18.	I imagine the pain is outside my body	0	1	2	3	4	5	6
19.	I continue as if nothing happened	0	1	2	3	4	5	6
20.	Although it hurts, I continue with what I started	0	1	2	3	4	5	6
21.	I feel like I can't take it anymore	0	1	2	3	4	5	6
22.	I ignore the pain	0	1	2	3	4	5	6
23.	I rely on faith in God	0	1	2	3	4	5	6
24.	I feel like I can't go on	0	1	2	3	4	5	6
25.	I think about the things I enjoy doing	0	1	2	3	4	5	6
26.	I do something I enjoy, like watching TV or listening to music	0	1	2	3	4	5	6
27.	I pretend the pain isn't part of me	0	1	2	3	4	5	6

be for them. Patients can choose one of the values between 0 (without pain) to 10 (the strongest pain that they can endure). Results indicate general pain sensitivity (Table 2).

CSQ is a tool that is often used in pain research. The currently available version offers 27 modes of behaviour. The respondents have to evaluate their behaviour according to the pain described in the questionnaire. The answers to the questions are scored, and range from zero to six. A scale value of 0 indicates that *I never do this*, a value of 3 indicates that *I sometimes do this*, and a value of 6 indicates that *I always do this*. The CSQ questionnaire includes conscious coping with pain, catastrophizing, distraction and reinterpretation. A higher number of points indicates a more frequent type of individual behaviour and to a greater tendency to catastrophize and distract attention (Table 3).

Premedication included Dormicum (midazolam) 7.5 mg or 3.75 mg *per os* depended of patient's body weight, Metoclopramide 10 mg tablet and Pantoprazole 40 mg tablet one hour before surgery. Before induction of anaesthesia we applied preoxygenation to increase oxygen reserves and prevent hypoxia. Introduction to anaesthesia was performed with propofol 2 mg per kilogram and fentanyl 30 mcg per kilogram intravenously (*i.v*). Breathing was controlled after the introduction of the laryngeal mask. We used sevoflurane to maintain anaesthesia. The operations lasted about one to one and a half hours. All patients received *i.v.* Plasmalyte crystalloid non-pyrogenic solution 1000 ml. The temperature at the end of the operation remained the same as before the operation. The same analgesia protocol was applied to all patients. In the operating room, 15 minutes before the end of the operation, the patients received 100 mg Ketoprofen intravenously. After the surgery, the following analgesia was applied in the first 24 hours:

– Paracetamol 1 gr. at 16h *i.v.* (intravenous)
– Ketoprofen 100 mg diluted with 100 ml 0.9% sodium chloride 12 h after the first dose *i.v.*
– Tramadol 100 mg diluted with 100 ml 0.9% sodium chloride as needed *i.v.*
– First postoperative day (24-48h) the following therapy was applied:
– Pantoprazole 40 mg tablet + Metocopramide 10 mg tablet (at 08h)
– Ketoprofen 100 mg diluted with 100 ml 0.9% sodium chloride at 08h and 20h *i.v.*
– Paracetamol 500 mg 2 tablets at 16h
– Tramadol 100 mg diluted with 100 ml 0.9% sodium chloride as needed *i.v.*
– Second postoperative day the following therapy was applied:
– Pantoprazole 40 mg tablet + Metokopramide 10 mg tablet (at 08h)
– Ketoprofen 100 mg diluted with 100 ml sodium chloride at 08h and 20h *i.v.*
– Paracetamol 500 mg 2 tablets at 16h
– Tramadol 100 mg diluted with 100 ml 0.9% sodium chloride as needed *i.v.*

To assess postoperative pain, we used the NRS (numeric rating scale) using a 0–10 scale, with zero meaning *no pain* and 10 meaning *the worst pain imaginable*. We measured static and dynamic NRS postoperatively; after two hours, six hours, twelve hours, eighteen hours, twenty four hours, forty-eight hours and seventy two hours. Dynamic NRS was determined when the patient sat down or got out up from the bed, raised her arms or coughed.

Among the other data, we recorded the age of the patients as well as the eventual occurrence of nausea and vomiting every three days after the operation. Total, subjective satisfaction with analgesia was also measured, where we gave five options to choose from: significantly worse than expected, worse than expected, as expected, better than expected and significantly better than expected. After collecting all 96 completed and coded worksheets, the data were entered into the computer and statistically processed. Statistical analysis was performed using the SAS 9.4 software package (SAS, 2012).

RESULTS

The average age of the participants was 59.93±13 years.

Table 4.

Results for the Numeric Rating Scale (NRS) after two hours and the Pain Sensitivity Questionnaire (PSQ) according to the pain sensitivity

Sensitivity group	Variable	Mean	Min	Max	Mode
Slightly sensitive (n=25)	PSQ	75.68	36	122	66
	NRS S2	2.60	0	6	2
	NRS D2	3.76	1	8	2
Medium sensitive (n=54)	PSQ	75.31	28	131	73
	NRS S2	2.66	0	8	3
	NRS D2	3.64	1	10	4
Very sensitive (n=17)	PSQ	92.53	48	135	88
	NRS S2	2.76	0	7	2
	NRS D2	3.65	0	9	4

According to the algometer measurements, we divided the patients into three groups. Of the total number of patients, 26% were slightly sensitive, 56.3% were moderately sensitive, and 17.7% were very sensitive (Table 4).

We analyzed the PSQ questionnaires according to the answers received from the patients. Each answer carries a certain number of points from 0-10. Results for individual patients range from 28 to 135. Analyzing the data by pain sensitivity groups, the results are as follows. Patients very sensitive to pain have higher values of the PSQ questionnaire with an average value of 92.53, moderate sensitive have 75.31 and slightly sensitive 75.68 (Table 4).

The total static NRS value after the first 2 hours at group of very sensitive patients was 2.76, and the dynamic NRS was 3.65. In the group of patients with moderate sensitivity to pain, the static NRS after 2 hours was 2.66, and the dynamic NRS was 3.64. Patients slightly sensitive to pain have the static NRS after 2 hours 2.6, while the dynamic one 3.76. The highest values were measured after the first two hours of operation. As expected, dynamic NRS shows higher results compared to static NRS for all measurements from two hours to 72 hours after surgery and shows a decreasing trend with time (Table 5). From the above, it can be

Table 5.
Results of the Static (S) and the Dynamic (D) Numeric Rating Scale (NRS) measurements per hour (2-6-12-18-24-48-72)

Variable	Mean	SD	Min	Max	Mode
NRS S2	2.66	2.09	0	8	2
NRS D2	3.67	2.45	0	10	4
NRS S6	1.81	1.62	0	6	0
NRS D6	2.93	2.11	0	10	3
NRS S12	1.28	1.25	0	5	0
NRS D12	2.17	1.68	0	8	2
NRS S18	1.07	1.26	0	5	0
NRS D18	1.88	1.73	0	8	2
NRS S24	0.71	1.13	0	5	0
NRS D24	1.52	1.58	0	7	0
NRS S48	0.45	0.88	0	5	0
NRS D48	0.92	1.30	0	6	0
NRS S72	0.16	0.42	0	2	0
NRS D72	0.57	1.00	0	5	0

Table 6.
Correlation of CSQ (Coping Strategies Questionnaire) catastrophizing and ALG (algometer data)

Pearson Correlation Coefficients Prob > Irl under HO: Rho=0 Number of Observations		
	ALG_mean	**CSQ catastrophizing**
ALG_mean	1.00000 96	_0.19288 0.05 96
CSQ catastrophizing	_0.19288 0.05 96	1.00000 96

noted that the results of the NRS in all our patients do not show statistically significant differences, which indicates that all our patients had good postoperative analgesia (Table 5).

The correlation between NRS, algometry and PSQ results do not show statistically significant correlations. However, a correlation can be observed between the algometry and the PSQ test ($p<0.05$) in the group of very pain sensitive patients.

The correlation between the NRS, the algometry and the results of the CSQ questionnaire do not show a statistically significant difference. However, the results indicate the connection between the variables measured by the algometry and catastrophizing (Table 6).

There was no statistical significance among groups according to postoperative nausea and vomiting. We can probably connect this with the preoperative preventive therapy with antiemetic as well as the fact that we met the analgesic needs of most patients with non-opioid analgesics and thereby reduced the incidence of PONV (postoperative nausea and vomiting). The age of patients negatively correlates only with NRS (static and dynamic) measurement in the first 24 hours after surgery.

The majority of patients (77.1%) expressed on the day of the operation that they were satisfied with the analgesia or that analgesia was significantly better than expected, while 19.8% said that the satisfaction with the analgesia was as expected. On the first day after surgery, satisfaction with analgesia increases, a total of 97.9% are satisfied, and the trend of increasing satisfaction with analgesia continues on the second day after surgery. On the second day, a total of 97.8% are satisfied, of which 92.2% evaluated overall analgesia as significantly better or better than expected (Figure 1). Only three patients required additional analgesia (2.91%) on the day of surgery. We gave them a bolus of tramadol *i.v.*

DISSCUSION

In most developed countries, the number of women suffering from breast cancer is constantly increasing. Unfortunately, an increasing number of women in younger age groups are affected. A higher survival rate, in addition to bringing optimism, obliges us to introduce different methods that enable quality life after treatment. One of these methods is the improvement of perioperative analgesia in order to reduce chronic pain. We believe that it is more effective to have specific analgesic protocols for individual operations compared to general guidelines, and therefore we believe that the results of this research can help in the formation of an analgesia protocol that is adapted to the individual needs of patients who need to be operated on for breast cancer. In this way, we are given the opportunity to recognize patients who suffer from stronger postoperative pain and thus have a greater need for analgesic therapy. With this approach, we would significantly contribute to reducing the chronicity of acute postoperative pain. Chronic surgical pain significantly reduces the quality of life, burdens the health system and can have an adverse effect on the overall outcome of the patient's treatment.

Although the medical literature investigating pain threshold is scarce, algometry is a useful tool in assessing pain sensitivity(2). Assessment of

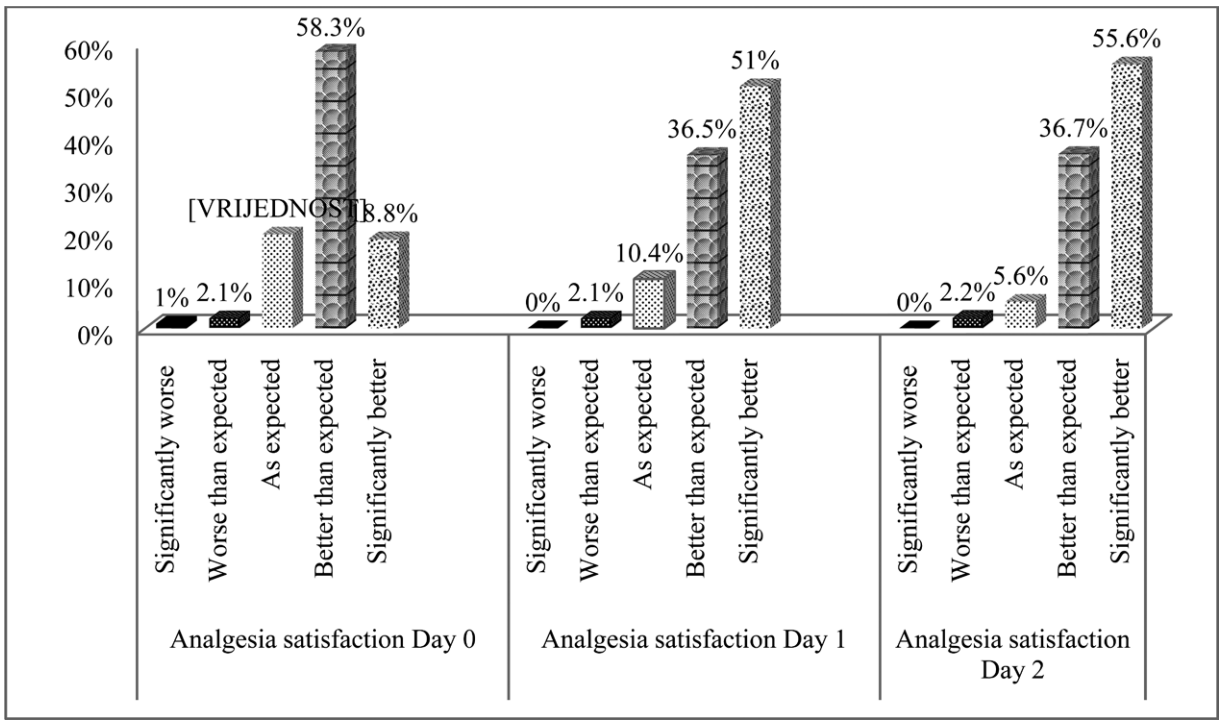

Figure 1. Patient's analgesia satisfaction by days

sensitivity to pain is particularly important for the identification of patients who are very sensitive to pain, as we have shown in our research(3). In addition to the algometry, the results obtained by filling out the PSQ and CSQ questionnaires also point to patients who will need additional postoperative analgesia(4). With the PSQ questionnaire, patients were offered possible painful situations, and on a scale of 0-10 they rated their personal experience of pain. The results obtained by the PSQ questionnaire indicate a connection between the experience of pain and the results obtained by measurements with an algometer. Patients very sensitive to pain statistically significantly differed from the group of slightly and moderately sensitive to pain, according to the PSQ questionnaire ($p<0.05$). With the CSQ questionnaire, patients were offered ways to react to painful situations. People who experience physical pain show different types of thinking and behavior about the existence of longer or shorter pain. Sometimes these are instructions to themselves, thinking about what will happen with the pain, or doing some activity to alleviate or change the situation. Based on the results of the CSQ questionnaire, we could see that patients who are prone to negative thinking and catastrophizing have lower values measured on the algometer and belong to the group of very sensitive to pain. They also had higher values on the postoperative NRS scale.

Studies testing preventive measures, however, have so far failed to produce consistent positive results. If preventive measures could be targeted to a subgroup of patients at high risk of persistent pain, positive results would be more likely(5). To assess postoperative pain, we measured static and dynamic NRS. We measured static and dynamic NRS postoperatively after two hours, six hours, twelve hours, eighteen hours, twenty-four hours, forty-eight hours, and seventy-two hours. The dynamic NRS was determined when the patient sat down or got up from the bed, raised her arms or coughed. The NRS has been widely used clinically for the assessment of pain(6).

Research has shown that by using an algometer, very sensitive patients can be identified, and the analgesia protocol can be planned and adjusted in advance. Assessment of preoperative sensitivity to pain using the PSQ scale of pain experience and determination of pain with an algometer are predictors of the intensity of postoperative pain in the segment of very sensitive patients. Pa-

tients who were very sensitive to pain required additional analgesia, and their PSQ questionnaire results were statistically significantly different from those of slightly and moderately sensitive group of patients. The education of the entire team that participates in the treatment of pain, as well as the examination of the patient in the preoperative phase in order to more effectively define the analgesic protocol, proved to be useful(7). Furthermore, the assessment of postoperative pain using the NRS scale indicates the adequacy of the applied analgesia(8).

CONCLUSION

The results of this research point to the need to create an analgesia protocol that would be adapted to the individual needs of patients. Algometer and said questionnaires give us the opportunity to recognize patients who will suffer from stronger postoperative pain and thus have a greater need for postoperative analgesia. Such an approach would significantly contribute to reducing the chronicity of acute postoperative pain. A further step in this research would be to investigate the eventual occurrence of chronic pain in the patients who were included in this study, and the connection between chronic pain and acute pain measured by the parameters we used in this study. PSQ and algometer can be used in the preoperative period as predictors of pain in the postoperative period for very sensitive patients. Analyzing the results of the CSQ questionnaire, we concluded that there is a connection between patients who are highly sensitive to pain and those who are prone to catastrophizing.

REFERENCES

1. Brkljačić B, Šupe Parun A. Croatian success in early breast cancer detection: favorable news in Breast Cancer Awareness Month. Croat Med J. 2020;61(5):389-90.
2. Deodato M, Granato A, Ceschin M, Galmonte A, Manganotti P. Algometer assessment of pressure pain threshold after onabotulinumtoxin-A and physical therapy treatments in patients with chronic migraine: an observational study. Front Pain Res. 2022;10(3):770397.
3. Rehberg B, Mathivon S, Combescure C, Mercier Y, Savoldelli GL. Prediction of acute postoperative pain following breast cancer surgery using the pain sensitivity questionnaire: a cohort study. Clin J Pain. 2017; 33(1):57-66.
4. Tuna T, Van Obbergh L, Cutsem V, Engelman E. Usefulness of the pain sensitivity questionnaire to discriminate the pain behaviour of chronic pain patients. Br J Anaesth. 2018; 121(3):616-22.
5. Dereu D, Savoldelli GL, Combescure C, Mathivon S, Rehberg B. Development of a simple preoperative risk score for persistent pain after breast cancer surgery: a prospective observational cohort study. Clin J Pain. 2018;34(6):559-65.
6. Okamoto A, Yamasaki M, Yokota I, Mori M, Matsuda M, Yamaguchi Y, et al. Classification of acute pain trajectory after breast cancer surgery identifies patients at risk for persistent pain: a prospective observational study. J Pain Res. 2018;5(11):2197-206.
7. Lončarić-Katušin M, Persoli-Gudelj M, Šimić-Korač N, Blažanin B, Žunić J, Korač Ž. Acute postoperative pain therapy: Current state-patient experience. Acta Clin Croat. 2006;45:15-9.
8. Šoštar A, Ćulav K, Štefančić Lj, Misir Šitum S, Janev D. The importance of timely and regular assessment of pain after breast cancer surgery. Libri Oncol. 2014;42 (1-3):107-15.

Sažetak

PREDSKAZATELJI INTENZITETA AKUTNE POSLIJEOPERACIJSKE BOLI U BOLESNICA S KARCINOMOM DOJKE

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Sve do sada moderna medicina nema pouzdane alate za objektiviziranje i mjerenje boli. Učinkovitim liječenjem boli intraoperativno i postoperativno spriječavamo pojavu kronične boli. U ovom istraživanju željeli smo utvrditi možemo li i u kojoj mjeri pomoću algometra te PSQ i CSQ upitnika procijeniti intenzitet i snagu postoperativne boli te prema tome prilagoditi protokol analgezije. Istraživanje smo provodili od veljače do travnja 2019, u Klinici za tumore u Zagrebu, a obuhvatilo je 100 bolesnica koje su primljene u bolnicu radi operacije raka dojke. Preoperativno su sve bolesnice ispunile PSQ i CSQ upitnike, a algometrom smo izmjerili bolnu osjetljivost. Kod svih bolesnica primjenili smo isti analgetski protokol. Postoperacijska bol mjerena je NRS ljestvicom 2, 6, 12, 18, 24, 48 i 72 sata nakon operacije. Prema vrijednostima dobivenim algometrom, bolesnice su podijeljene u tri skupine; malo osjetljive, srednje osjetljive i vrlo osjetljive na bol. Korelacija između PSQ upitnika i NRS-a je statistički značajna u skupini vrlo osjetljivih bolesnica. Istraživanje je pokazalo da algometar može identificirati vrlo osjetljive bolesnice te omogučiti preoperativno prilagođavanje analgetskog protokola.

KLJUČNE RIJEČI: *bol, karcinom dojke, algometar, analgezija*