Correlation between preoperative anxiety and acute postoperative pain in elderly patients submitted to transvesical prostatectomy

Correlação da ansiedade pré-operatória com a dor pós-operatória aguda em idosos submetidos à prostatectomia transvesical

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ABSTRACT

BACKGROUND AND OBJECTIVES: The objective of this study was to correlate the level of anxiety presented in the preoperative period with the intensity of pain reported by elderly in the immediate postoperative period of transvesical prostatectomy.
METHODS: Sixty-four elderly patients submitted to transvesical prostatectomy were studied, using the following instruments: the numeric pain scale and Hamilton anxiety rating scale in the preoperative; and the short-form McGill pain questionnaire (Portuguese version adapted) in the immediate postoperative period. The elderly divided into four groups, according to the level of anxiety presented in the preoperative period: absent, mild, moderate and intense. The Spearman correlation was established between preoperative anxiety levels and postoperative pain intensity.
RESULTS: There was a significant positive correlation between the level of preoperative anxiety and pain intensity in the immediate postoperative period. The pain curves (sensitive and affective) presented a significant increase at moments 6, 18 and 24h in all groups. These curves were significantly higher in the elderly with moderate and intense anxiety than in those without anxiety and mild anxiety. The pain peak was recorded at 18h after surgery in all groups.
CONCLUSION: In the elderly, the level of anxiety presented in the preoperative period was positively correlated with the pain response in the immediate postoperative of transvesical prostatectomy. The use of preoperative measures that reduce anxiety can improve analgesia in the immediate postoperative period of this surgery and, therefore, reduce the amount of analgesics used in this period. There was also a need for intervention with adequate analgesia at the postoperative pain peak which occurred 18h after surgery.
Keywords: Elderly, Postoperative pain, Preoperative anxiety, Prostatectomy, Prostate hyperplasia.

RESUMO

JUSTIFICATIVA E OBJETIVOS: O estudo, realizado em idosos, objetivou correlacionar o nível de ansiedade apresentado no período pré-operatório com a intensidade da dor no pós-operatório imediato de prostatectomia transvesical.
MÉTODOS: Foram estudados 64 idosos submetidos à prostatectomia transvesical, aplicando-se os seguintes instrumentos: escala numérica de dor e escala de ansiedade de Hamilton, no pré-operatório; e questionário reduzido de dor de McGill (versão adaptada para a língua portuguesa), no pós-operatório imediato. Os idosos foram divididos em quatro grupos, segundo o nível de ansiedade apresentado no pré-operatório: ausente, leve, moderado e intenso. Foi realizada correlação de Spearman entre os níveis de ansiedade pré-operatória e a intensidade da dor pós-operatória.
RESULTADOS: Houve correlação positiva significativa entre o nível de ansiedade pré-operatória e a intensidade da dor no pós-operatório imediato. As curvas de dor (sensitiva e afetiva) apresentaram aumento significativo nos momentos 6, 18 e 24h em todos os grupos. Essas curvas foram significativamente maiores nos idosos com ansiedade moderada e intensa do que naqueles sem ansiedade e com ansiedade leve. Foi registrado pico de dor no momento 18h no pós-operatório em todos os grupos.
CONCLUSÃO: Em idosos, o nível de ansiedade apresentado no pré-operatório correlacionou-se positivamente com a resposta álgica no pós-operatório imediato de prostatectomia transvesical. A utilização de mensurações pré-operatórias redutoras da ansiedade pode melhorar a analgesia no pós-operatório imediato dessa cirurgia e, assim, diminuir a quantidade de analgésicos utilizados nesse período. Verificou-se, também, necessidade de intervenção com analgesia adequada no momento do pico de dor 18h do pós-operatório.
Descritores: Ansiedade pré-operatória, Dor pós-operatória, Hiperplasia prostática, Idoso, Prostatectomia.

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INTRODUCTION

The elderly population is submitted four times more to the number of surgeries than the non-elderly, and this number has been increasing progressively[1]. In the future, with the accelerated increase in the elderly number, the majority of surgical patients will be over 65 years old and many of them over 80 years old[2]. Benign prostatic hyperplasia (BPH) is one of the most common morbid processes in the elderly. In those older than 80 years,

90% have histological evidence of this condition, 81% have symptoms related to the disease and 10% develop acute urinary retention. One of the BPH's treatments is transvesical prostatectomy (TVP)[3].

Pain is subjective, encompassing all symptoms described by the patient as such. The existence of several pain types can be understood by identifying nociception, painful perception, suffering and painful behavior, identifying anatomical, physiological and psychological substrates underlying these clinical situations[4,5]. Acute perioperative pain is related to the nociceptive stimulation produced by an injury resulting from the surgical act, resulting in sensory, cognitive and emotional experiences associated with autonomic and behavioral responses and high anxiety index[6,7].

Although pain is produced as an affective response to the perception of stress that surrounds the somatic, motor, and cognitive systems, understanding the pain's psychology remains challenging for health professionals. It demands the transcendent of the objective event dimension and the particularities of each patient must be considered, i.e., the pain impact in their life and in the sociocultural context in which they are inserted[8,9].

The stressful factors presence can modify psychosocial impact, vulnerability, and tolerance to pain[10.] The anxiety level found in the elderly, who will undergo the surgical procedure, may influence his evolution in the postoperative period (PO)[11,12]. Relations between preoperative anxiety and acute postoperative pain are reported in individuals submitted to different surgical procedures, including elective abdominal hysterectomy[13], radical mastectomy[14], breast cancer surgery[15], and colorectal surgery[16]. In addition, preoperative anxiety, measured as the anticipatory specific anxiety of surgery versus general anxiety measurement, is a significant independent predictor of intense pain in the PO (measurement in the visual analog scale >7/10) in subjects undergoing several surgical procedures (ophthalmic, laparoscopic, abdominal surgery and orthopedic)[17].

The direct correlation between the preoperative anxiety level and the pain degree referred to in the PO is expressed in the higher amount of analgesics used in the PO in individuals who present a higher anxiety level in the preoperative period[13,18]. In the elderly population, it is important to highlight that pain postpones hospital discharge, with a consequent increase in costs and greater probability of complications[19].

This study aimed to evaluate the pain in the immediate PO of the elderly undergoing TVP, correlating their degree with the anxiety level found in the preoperative period.

METHODS

This is a qualitative-quantitative research, with an observational, analytical, prospective cohort study. Elderly patients aged 60 and over, belonging to social classes 1 to 5, submitted to TVP in the Urology Service of *Hospital Regional da Asa Norte*, which belongs to *Fundação Hospitalar do Distrito Federal*, in the period of May 2009 to May 2010 were included.

78 elderly patients undergoing TVP surgery were studied. Sample calculation was performed using the following formula[20]:

n=Z2alfa/2. p.q/E2. Being: n=sampling number; Z a/2=critical value that corresponds to the desired degree of confidence; the p=population proportion of subjects studied with anxiety; the q=population proportion of individuals who do not belong to the studied category (without anxiety) (q=1-p); E=estimated maximum error.

Inclusion criteria were: elderly ≥60 years; submitted to TVP in the service studied and during the study period; signing the Free and Informed Consent Form (FICF), after providing the appropriate clarifications and settled any doubts.

Exclusion criteria were: severe status, physical status ASA III (or above), that is, in a state of clinical decompensation[21]; cognitive deficit, evaluated with the Mini Mental State Examination (MMSE)[22]; chronic pain[4], pain index above 3 on the numerical pain scale (NPS)[23], in usual use of drugs or assisted in an outpatient clinic of pain; depression or anxiety diagnosed by a physician, using an antidepressant or permanent anxiolytic drug, or attending a psychiatric outpatient clinic for anxiety or depression treatment; anesthesia different from that used in the research protocol.

Surgical procedure technique and the teams involved during the research period were the most similar possible. The anesthetic technique, used in all patients, consisted of simple hyperbaric spinal anesthesia with a 25G needle, via median, between the 3rd and 4th or between the 3rd and 4th lumbar inter-area (L2-L3 or L3-L4), using hyperbaric bupivacaine at 0.5% (15mg), associated with 0.08mg of morphine. The latter was used in all patients since TVP is a surgical procedure described with a high degree of pain in the immediate postoperative period[24]. Anxiolytics were not used as an intraoperative rescue. In the immediate PO, drugs that could affect the cognition of the patient, such as ketamine, promethazine, and droperidol, were avoided[25].

Initially, patients completed the questionnaire with their sociodemographic and clinical profile (name, age, gender, schooling, marital status, occupation, weight (in kg), tobacco and alcohol consumption, and comorbidities).

At the routine preanesthetic visit, performed the day before the day of surgery, the patients were explained in detail about the procedures to be performed, and their questions and doubts were answered. Then the following instruments are applied in the order indicated: MMSE[22], NPS[23] and Hamilton's anxiety scale (Ham-A)[26]. MMSE[22] was applied so that patients with cognition disorders were excluded.

NPS[23] was used in the self-assessment of the acute pain intensity present in the preoperative period. This scale consists of a 10cm long straight, presenting in the left end the number zero, which indicates absence of pain; 1, 2 and 3 indicating mild pain; 4, 5 and 6, moderate pain; 7, 8 and 9, severe pain; and 10, which is the worst pain, unbearable, inserted on the line's right side. Patients with a pain index above 3 were excluded.

Ham-A[26] is an instrument designed to access and quantify the severity of the anxiety. It consists of 14 items. Each item has a score of five points on a Likert type scale, from zero to four, and higher scores indicate more intense anxiety. Ham-A is composed of two subscales: psychic and somatic. Psychic subscale (items 1-6 and 14) is directed toward more subjective, cognitive, and af-

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fective anxiety complaints (such as anxious mood, tension, fears, difficulties in concentrating), and is particularly useful in the severity of generalized anxiety disorder. Somatic component (items 1-13) emphasizes characteristics of generalized anxiety disorder, such as autonomic excitement, respiratory, gastrointestinal and cardiovascular symptoms.

After the NPS and Ham-A application, the standard pre-anesthetic medication, which consisted of oral midazolam (5mg), was prescribed.

In the perioperative period, blood pressure, pulse, heart rate, arrhythmias, hydration and peripheral oxygen saturation were monitored. After the surgical procedure, the patients were referred to the recovery room at post-anesthesia (PARR), being evaluated sequentially according to the modified Aldrete scale, until a score of 9 or 10 was obtained for PARR's discharge[27].

They were then referred to the infirmary, where the pain assessment was performed in the immediate PO at 6, 18, 24 and 30h after the anesthesia beginning, with the application of the McGill Reduced Pain Questionnaire (QR-MPQ)[28], also observing in this period the total consumption of analgesics.

McGill Questionnaire (MPQ)[28] is a useful instrument for measuring pain, having been translated into Portuguese and validated in Brazil[29]. In the current research, its abbreviated form (QR-MPQ) was used, consisting of 15 representative words of sensory (n=11) and affective (n=4) pain. For each descriptor, there is a number indicating its intensity, in ascending order, from zero to three[28,29].

The following measurements were made using the QR-MPQ: number of descriptors chosen, which corresponds to the number of words used by the patient to qualify their pain, the lowest number being zero (if no descriptor is chosen) and 15 being the highest (if chosen all descriptors); quantitative index of pain, obtained by summing the intensity values of the chosen descriptors, 45 being the highest possible index; Pain Present Index (PPI), which is the combination of the number (on the left) with the chosen word (on the right), indicator of the pain intensity as a whole at the time of questionnaire administration; visual analog scale (VAS) and NPS, in order to obtain an indicator of pain intensity as a whole.

After the last QR-MPQ measurement, the patients were divided into four groups, according to the anxiety level presented in Ham-A, applied in the preoperative period: group 1, the absence of anxiety; group 2, mild; group 3, moderate; and group 4, intense.

The research was approved by Ethics and Research Committee of the Teaching and Research Foundation for Health Sciences (*Fundação de Ensino e Pesquisa em Ciências da Saúde (FEPECS)*), with the opinion No. 307/2009 and registration No. 395/2009.

Statistical analysis

Statistical Package for Social Science for Windows (SPSS 10.0) was used. Initially, the descriptive analyzes were carried out to characterize the sample. Normality assessment was done using the Kolmogorov-Smirnov's test, and the homoscedasticity assessment was done with the Levene's test. Data were represented by averages and standard deviations. Variance Analysis for repeated

measurements was done with the Bonferroni's test, being used as a post hoc to verify the pain's behavior, according to the anxiety level found in the preoperative period. Spearman's correlation was assessed between anxiety levels and pain intensity. The significance level was set at $p \leq 0.05$.

RESULTS

From the 78 elderly patients submitted to TVP during the study period, 14 were excluded for the following reasons: use of anxiolytic (2) and antidepressant (1); consultation in an outpatient clinic for pain (2) and psychiatry (2), anesthesia different from that adopted in the research protocol (4); and no signature of the ICF (3).

The sample consisted of 64 male patients, average age of 69.25±5.38 years (60 to 83 years), divided into four groups according to the anxiety level presented in the preoperative period: group 1, 29 (10.9%) showed no anxiety; group 2, 26 (40.6%) mild; group 3, 20 (31.2%) moderate; and group 4, 11 (17.9%) intense.

Among the groups, there were no significant differences related to age, weight, schooling, marital status, occupation, smoking and alcohol consumption, comorbidities and days of hospitalization, as well as the data monitored during the surgical procedure. In the preoperative period, there was no significant correlation between the anxiety level and the somatic and affective pain reported. When correlating the preoperative anxiety level with somatic pain in the immediate postoperative period, a positive and moderate correlation was identified after 6h and positive and intense, after 18, 24 and 30h. Thus, the higher the anxiety level presented in the preoperative period, the greater was the report of somatic pain in the immediate PO. When this same correlation was carried out with affective pain in the immediate PO, a positive and intense correlation was identified after 6, 18, 24 and 30h, showing that the higher the anxiety level in the preoperative period, the higher the affective pain in the immediate PO (Table 1).

Table 1. Correlation between preoperative anxiety levels and somatic and affective pain in the immediate postoperative period of transvesical prostatectomy (n=64), HRAN, DF

	Somatic pain		Affective pain	
	R	P value	R	p value
Preoperative	0.02	0.90	0.02	0.86
6h PO	0.53	0.001*	0.80	0.001*
18h PO	0.80	0.001*	0.83	0.001*
24h PO	0.76	0.001*	0.84	0.001*
30h PO	0.70	0.001*	0.87	0.001*

PO: postoperative; *p<0.001.

A significant interaction between the groups and evaluation moments of the sensory pain [$F_{(12,240)}=13.65$; p=0.001] was demonstrated. Results between the groups showed that in the preoperative period there was no significant difference between them; 6, 18, 24 and 30h PO, there were significant differences

(p<0.05), with pain values (pain index) in groups 1 and 2 being lower than in groups 3 and 4 (Figure 1).
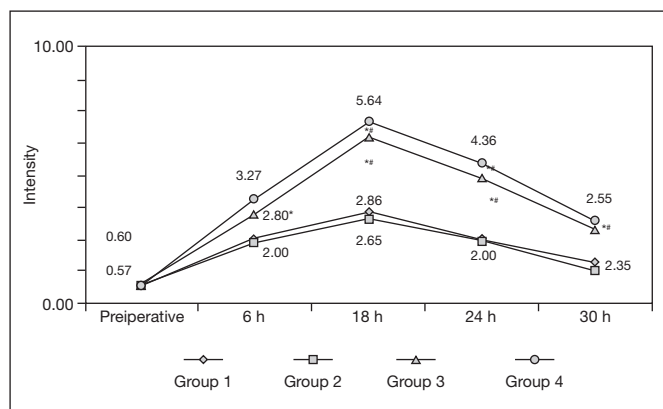
Figure 1. Sensitive pain's evaluation in the preoperative period and in different moments of the immediate postoperative period of transvesical prostatectomy, according to the anxiety level presented in the preoperative period (n=64), HRAN, DF

* p<0.05, significant difference in relation to group 1; # p<0.05, significant difference in relation to group 2.

A significant interaction between the groups and evaluation moments at NPS [F (12, 240)=31.50; p=0.001] was observed. As for affective pain, the comparison between groups showed that in the preoperative period there was no significant difference; 6, 18, 24 and 30h PO showed significant differences (p<0.05), with values of groups 1 and 2 lower than those of groups 3 and 4; and 30h PO, a significant difference (p<0.05) also appeared with values of group 3 smaller than those of group 4 (Figure 2).
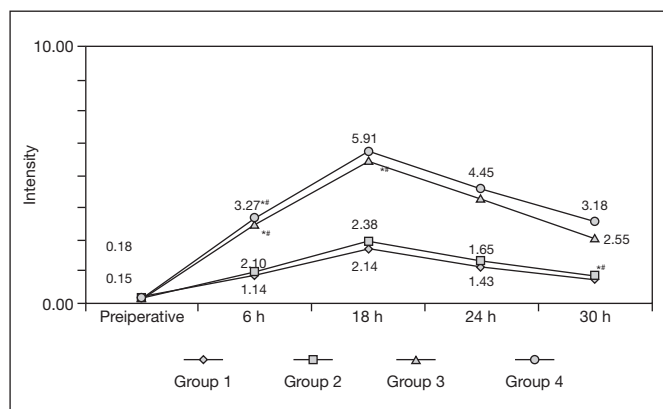
Figure 2. Affective pain's evaluation in the preoperative period and in different moments of the immediate postoperative period of transvesical prostatectomy, according to the anxiety level presented in the preoperative period (n=64), HRAN, DF

* p≤0.05, a significant difference in relation to group 1; # p≤0.05, a significant difference in relation to group 2; ∞ p≤0.05, a significant difference in relation to group 3.

Significant interaction between the groups and evaluation moments at NPS [F (12, 240)=15.56; p=0.001] appeared. On this scale, results between the groups showed that in the preoperative period there was no significant difference; while 6, 18, 24 and 30h PO, there were significant differences (p<0.05), with values in groups 1 and 2 being lower than in groups 3 and 4 (Figure 3).
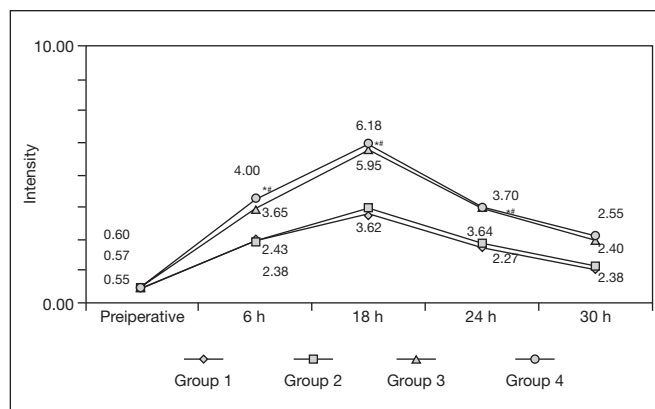
Figure 3. Numerical scale assessment of pain in the preoperative period and in different moments of the immediate postoperative period of transvesical prostatectomy, according to the anxiety level presented in the preoperative period (n=64), HRAN, DF

* p<0.05, significant difference in relation to group 1; # p<0.05, significant difference in relation to group 2.

A significant interaction between the groups and evaluation moments at PPI [F(12, 240)=9.82; p=0.001] was found. There was an interaction between groups 1 and 2 and, at the other end; between groups 3 and 4, i.e., groups 1 and 2 with each other and groups 3 and 4 with each other were similar in the evaluation of this index. Results between the groups showed that in the preoperative period there was no significant difference; while 6, 18 and 24h PO, there were significant differences (p<0.05), with results in groups 1 and 2 being lower than in groups 3 and 4. Groups 1 and 2 had lower pain indexes than groups 3 and 4, with a significant difference, which indicates that the higher the anxiety level presented in the preoperative period, the greater the pain reported in the immediate postoperative period. At evaluation time of 30h PO, no significant differences emerged (Figure 4).
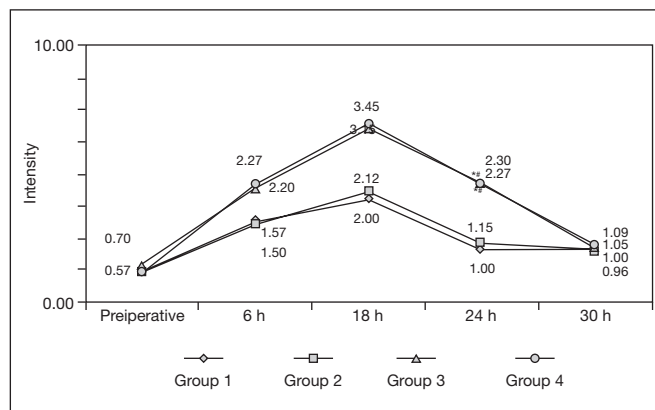
Figure 4. Assessment of present pain index in the preoperative period and in different moments of the postoperative period of transvesical prostatectomy, according to the anxiety level presented in the preoperative period (n=64), HRAN, DF

When correlating the anxiety levels presented in the preoperative period with NPS in the PO, a positive and intense correlation was demonstrated after 6, 18 and 24h and a positive and moderate correlation was demonstrated after 30h. That is, the higher the anxiety level demonstrated in the preoperative period,

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Table 2. Correlation between the preoperative anxiety levels and the numerical scale of pain measured in different moments of the postoperative period of transvesical prostatectomy, according to the anxiety level presented in the preoperative period (n=64), HRAN, DF

Measurement moments of NPS	Preoperative anxiety levels	
	p value	p value
Preoperative	0.02	0.90
6h PO	0.75	0.001*
18h PO	0.84	0.001*
24h PO	0.77	0.001*
30h PO	0.67	0.001*

NPS = numeric pain scale; PO = postoperative; * p<0.001.

Table 3. Correlation between the preoperative anxiety levels and the present pain index measured in different moments of the postoperative period of transvesical prostatectomy, according to the anxiety level presented in the preoperative period (n=64), HRAN, DF

Measurements moments of PPI	Preoperative anxiety levels	
	p value	p value
Preoperative	0.06	0.66
6h PO	0.56	0.001*
18h PO	0.76	0.001*
24h PO	0.81	0.001*
30h PO	0.16	0.21

PPI = present pain index; PO = postoperative; *p<0.001.

the greater was the report of pain in the immediate PO. There was no significant correlation between anxiety level and NPS reported in the preoperative period (Table 2).

When correlating preoperative anxiety levels with the present pain index (PPI), a positive and moderate correlation was demonstrated after 6h (r=0.56, p=0.001) and positive and strong was demonstrated after 18h (r=0, 76, p=0.001) and 24h (r=0.81, p=0.001). Thus, the higher the anxiety level presented in the preoperative period, the greater was the report of pain in the 6h, 18h and 24h immediate PO. There was no significant correlation between anxiety level and PPI in the preoperative period and after 30h PO (Table 3).

Table 4 lists the correlations between preoperative anxiety levels and pain measured at different postoperative moments. In the four measurements, sensitive pain, affective pain, NPS and PPI, these correlations were significant (p=0.001).

DISCUSSION

In this research, there was a correlation between the anxiety presented in the preoperative period and the pain referred in different moments of the immediate PO of TVP surgery. Therefore, in the sample studied, the presence of anxiety in the preoperative period was a positive predictor of pain presented in the immediate PO of this surgery.

In a systematic review of instruments for anxiety evaluation in the Brazilian population, it was evidenced the adequacy of

Table 4. Correlation between the preoperative anxiety levels and the pain measured in different moments of the postoperative period of transvesical prostatectomy, according to the anxiety level presented in the preoperative period (n=64), HRAN, DF

Measurements	Moments	Group 1 (n=7)	Group 2 (n=26)	Group 3 (n=20)	Group 4 (n=11)	F value	p value
Sensitive pain	Preoperative	0.57 ± 0.53	0.54 ± 0.51	0.60 ± 0.50	0.55 ± 0.52	13.65	0.001
	6h PO	2.00 ± 0.58*	1.92 ± 0.63*	2.80 ± 1.44*	3.27 ± 0.47*		
	18h PO	2.86 ± 0.69*	2.65 ± 0.69*†	5.20 ± 0.95*†	5.64 ± 0.81*†		
	24h PO	2.00 ± 1.15*	1.96 ± 0.96*∞	3.95 ± 0.83*†∞	4.36 ± 0.50*†∞		
	30h PO	1.29 ± 0.49∞	0.96 ± 0.77†∞°	2.35 ± 0.49*∞°	2.55 ± 0.52*∞°		
Affective pain	Preoperative	0.14 ± 0.38	0.15 ± 0.37	0.15 ± 0.37	0.18 ± 0.40	31.50	0.001
	6h PO	1.14 ± 0.38*	1.23 ± 0.65*	3.10 ± 0.72*	3.27 ± 0.65*		
	18h PO	2.14 ± 0.90*†	2.38 ± 0.50*†	5.55 ± 1.28*†	5.91 ± 0.94*†		
	24h PO	1.43 ± 0.53*∞	1.65 ± 0.56*∞	4.10 ± 0.97*†∞	4.45 ± 0.82*†∞		
	30h PO	1.00 ± 0.00*∞	1.04 ± 0.45*∞°	2.55 ± 0.60*†∞°	3.18 ± 0.40*∞°		
NPS	Preoperative	0.57 ± 0.53	0.54 ± 0.51	0.60 ± 0.50	0.55 ± 0.52	15.56	0.001
	6h PO	2.43 ± 0.53*	2.38 ± 0.57*	3.65 ± 0.59*	4.00 ± 0.63*		
	18h PO	3.43 ± 0.53*†	3.62 ± 0.64*†	5.95 ± 0.76*†	6.18 ± 0.60*†		
	24h PO	2.14 ± 0.38*∞	2.27 ± 0.53*∞	3.70 ± 0.47*∞	3.64 ± 0.50*∞		
	30h PO	1.29 ± 0.49†∞°	1.38 ± 0.64*†∞°	2.40 ± 0.60*†∞°	2.55 ± 0.52*†∞°		
PPI	Preoperative	0.57 ± 0.53	0.54 ± 0.51	0.70 ± 0.47	0.55 ± 0.52	9.82	0.001
	6h PO	1.57 ± 0.53*	1.50 ± 0.51*	2.20 ± 0.41*	2.27 ± 0.47*		
	18h PO	2.00 ± 0.58*	2.12 ± 0.59*†	3.35 ± 0.49*†	3.45 ± 0.52*†		
	24h PO	1.00 ± 0.00†∞	1.15 ± 0.37*†∞	2.30 ± 0.47*∞	2.27 ± 0.47*∞		
	30h PO	1.00 ± 0.00†∞	0.96 ± 0.34*†∞	1.05 ± 0.22*†∞°	1.09 ± 0.30*†∞°		

Intragroup differences: *p<0.05, difference in relation to preoperative period; †p<0.05, difference in relation to 6h; ∞p<0.05, difference in relation to 18h; °p<0.05, difference in relation to 24h; PO = postoperative; NPS = numeric pain scale; PPI = present pain index.

the instrument used in this research for the anxiety evaluation in Brazil[30].

Different forms of pain were evaluated in the immediate PO, and there were no differences between their perceptions. Preoperative assessments and in different moments in the immediate PO, both of the sensitive pain and of the affective pain, showed ascending pain curves at moments 6 and 18h PO in all groups. However, the groups that presented without anxiety and with mild anxiety preoperatively showed this curve with significantly lower ancestry, whereas in the groups with moderate and intense anxiety this curve arose with greater ascendancy, which means that the patients of these two groups showed higher indexes of PO pain. A meta-analysis was recently carried out to evaluate the main relationships between preoperative emotional pain and postoperative pain. 46 studies were selected, with a total of 6,207 patients, in which it was observed that the high levels of pre-surgical emotional stress were associated with a significantly higher degree of pain and analgesic use in the immediate PO. The size of these relationships depended on methodological factors and samples characteristics, such as anxiety and depression associated, as well as the type of surgery. It was concluded that preoperative emotional stress is a risk factor for greater PO pain and disability, and there is a need for measures that reduce these emotional changes in the preoperative period[31].

There was also a peak of pain at the time 18h PO in all groups, which revealed an important pain window at that time. Therefore, actions that reduce pain and, consequently, its deleterious effects should be performed at this time. Previous publications reporting this pain window were not found. On this occasion, it is possible that the patients reported greater pain intensity because they presented low plasma concentration of analgesic since they had not yet used the drug in the morning. Another possibility is that, upon waking and moving, they felt the so-called incidental pain, as it is the moment that they realized that they had had surgery indeed. From the evaluation moment at 18h PO, i.e., 24 and 30h PO, there was a progressive reduction of the sensory and affective pain in all groups, but the previous relationship was maintained, i.e., the groups without anxiety and with mild anxiety presenting lower pain scores than those with moderate and intense anxiety.

It is described that a significant proportion of elderly patients submitted to different surgical procedures do not receive adequate treatment for pain arising in the immediate PO[32]. Among the factors that may contribute to hesitation, or even reluctance to provide analgesic treatment for the elderly postoperatively, include the risk of adverse drug reactions; misconception about the efficacy of non-pharmacological treatment strategies for pain; discriminatory attitudes towards patients with advanced age; and increased risk of polypharmacy[33]. Also among hospitalized elderly, 16 to 27% do not receive treatment for pain relief[34], and among elderly people with dementia, this fact occurs even more frequently[35].

PO pain that is more intense than expected and patients' reduced satisfaction with surgery are predictable when there is a

high level of preoperative anxiety[36]. In addition, when patients are emotionally suffering in PO, with consequent anxiety, this is accompanied by an increase in the incidence of somatic symptoms and painful complaints, leading to the frequent prescription of anxiolytics in the PO. However, the results of this association are still controversial[37].

In the present study, patients had surgery in a public hospital. Although every care was taken to make surgical teams as similar as possible, as well as the techniques applied in the surgical procedure, this was a potential bias in this study, since the teams were alternated on each 12-hour shift.

Early preoperative intervention, reducing the anxiety degree in elderly population, will probably alter the pain response in the immediate PO, optimizing pain handling and, consequently, reducing the consumption of potent analgesics during this period, which is particularly important in this age group that often uses polypharmacy. Future studies should be carried out evaluating the interventions in the elderly to reduce their anxiety in the preoperative period, thus reducing the pain response in the immediate PO. Mathematical models should be developed to test their predictive validity, as well as protocols that identify the vulnerable elderly.

CONCLUSION

It was confirmed that the elderly submitted to TVP presented a higher level of anxiety in the preoperative period and higher pain index in the immediate PO. There was also a peak of pain at the 18h PO in all groups, which revealed an important pain window at that moment.

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