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ORIGINAL ARTICLE

PAIN EVALUATION IN WOMEN WITH CERVICAL-UTERINE NEOPLASMS DURING BRACHYTHERAPY

Luciana Martins da Rosa[1]
Fernanda Lunardi[1]
Maria Eduarda Hames[1]
Gisele Martins Miranda[1]
Maristela Jeci dos Santos[2]
María Angélica Arzuaga-Salazar[3]

ABSTRACT

Objective: to evaluate pain intensity in women undergoing pelvic brachytherapy. Method: cross-sectional, analytical, quantitative study conducted in an oncology institution (Santa Catarina/Brazil), including 97 women undergoing pelvic brachytherapy, with (group 1) or without (group 2) anesthetic sedation. Data collection between September 2018 to July 2019, by structured interview and in the patient's medical record. Pain intensity assessed at five time points by visual analog scale. Analysis included frequency measures, chi-square test, adjusted standardized residuals analysis, generalized estimating equations, Bonferroni post-hoc test; significance level 0.05. Results: 51 women (52.6%) reported pain before brachytherapy, 73 (75.3%) after. At the removal of the applicators, group 1 reached 55.9% in the proportion of presence of pain, group 2, 36.8%. There was significance of pain perception by moment/sedation ($p<0.001$). Conclusion: pain perception observed in most women. The results contributed to revision of the institutional protocol for intravenous sedation and better pain control.

DESCRIPTORS: Brachytherapy; Nursing; Pain Perception; Oncology; Uterine Cervical Neoplasms.

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[1]Universidade Federal de Santa Catarina. Florianópolis, SC, Brasil.
[2]Centro de Pesquisas Oncológicas. Florianópolis, SC, Brasil.
[3]Facultad de Enfermería. Universidad de Antioquia. Medellín, Antioquia, Colômbia.

INTRODUCTION

Globally, uterine cervical neoplasm (604,127 new cases) represents the largest portion of the incidence of gynecological cancers, followed by neoplasm of the uterine body (417,367 new cases)[1]. It has been estimated that 16,710 new cases of uterine cervical neoplasm will occur in Brazil and 970 for the state of Santa Catarina in the year 2021[2]. In the setting of this study, the Centro de Pesquisas Oncológicas (CEPON), between 2010 and 2014, there was a prevalence of women with gynecological cancer undergoing radiation therapy in the topography of the cervix (uterine cervical neoplasm), 695 (78.9%) and uterine body, 166 (18.8%)[3].

Commonly, the treatment of women with gynecological cancers with locally advanced disease involves surgery, radiation therapy by teletherapy (radiation source at a distance) and by brachytherapy (radiation source in contact with the tumor), and chemotherapy[4-5]. At CEPON, pelvic brachytherapy is administered in the high dose rate modality and may include intravenous sedation (association of propofol and fentanyl). In this care setting, the practice of sedation in brachytherapy started in 2015. As for sedation in pelvic brachytherapy, the American Brachytherapy Society recommends conscious sedation, total intravenous anesthesia, regional or general analgesia. However, it states that there is no consensus on a standard protocol to be followed[6].

At the time of this study (2018 and 2019), in the state of Santa Catarina, only CEPON offered sedation to women during high-dose-rate brachytherapy, limiting this service to non-hysterectomized women. In this group of patients, the applicators are introduced up to the uterus[7].

The sedation intervention in pelvic brachytherapy occurs before the introduction of the applicators. The preparation of the procedure for application of ionizing radiation varies from 30 to 50 minutes in non-hysterectomized women; for radiation 10 minutes; for removal of the applicators and anesthetic recovery between 15 and 30 minutes.

For hysterectomized women, the procedure at CEPON continued to be performed without sedation or any other form of anesthesia or analgesia. In this group, the applicators are inserted into the vaginal canal. Considering the absence of the uterus, the professionals state that these women do not feel pain, only discomfort, so they state that sedation is not necessary. For hysterectomized women, the preparation for the procedure ranges from 15 to 30 minutes. Other time intervals for the procedure are like non-hysterectomized women.

During this period, the woman is semi-dressed in a gynecological position, with the applicators in the vaginal canal and cervix(uterine cervical neoplasm)/ uterus. To complete the therapy, the administration of the total dose of ionizing radiation is subdivided into three to four insertions, prescribed over a 15-day outpatient treatment period.

Despite the professionals' affirmation, expressions or complaints of pain were observed in clinical practice among hysterectomized women, as well as in non-hysterectomized women. Furthermore, quantitative analysis on the perception of pain in this scenario of care does not exist. In this context, it is hypothesized for this study that pelvic brachytherapy causes pain in women during the procedure, with or without sedation. It is understood that the investigation of this hypothesis may contribute to better pain control and oncologic care in this treatment modality.

The American Brachytherapy Society recommends further studies to develop protocols and nursing management during conscious sedation brachytherapy[6]. Thus, it is understood that this study may contribute to a better evaluation and control of the pain perceived by women undergoing pelvic brachytherapy at CEPON.

Pain is an unpleasant sensation or emotional experience associated with actual or potential tissue damage; it is a personal experience influenced by biological, psychological,

and social factors and identified by self-report or observation[8-9]. Cancer pain is classified as mixed (nociceptive and neuropathic) because it results from the compression of nerves, bones, facets, joints, and ligaments[10].

In pelvic brachytherapy, the perceived pain may be associated with oncological pain and therapeutic-related pain. Among these causes, the female reproductive tract and its nerve endings and the anxiety caused by the procedure, widely recognized as a side effect, stand out[5]. The women's position for brachytherapy applications (lithotomy position) associated with the insertion of applicators in the vaginal canal/ cervix(uterine cervical neoplasm), contributes to an increase in pain perception. The pain consequent to the procedure is considered an important stress factor and may cause post-traumatic stress disorder[5,11].

Review studies point out that there is a scarcity of data and clinical studies assessing pain or discomfort experienced by women in pelvic brachytherapy. In addition, they point out that assessment of self-reported pain provides valuable information about the distress and fears experienced by women, as well as the effectiveness of pharmacological or non-pharmacological support, assisting in the development of more effective interventions. They also indicate that women compare brachytherapy to natural childbirth, most of them reporting mild and moderate pain and 9% severe pain[5,11]. This context justifies the objective of this investigation to evaluate the intensity of pain in women undergoing pelvic brachytherapy.

METHOD

Cross-sectional, analytical, quantitative study conducted at the Radiotherapy Outpatient Clinic of CEPON (Santa Catarina/Brazil), a reference public service in oncological treatment in Santa Catarina and World Health Organization (WHO) Reference Center for Palliative Medicine in Brazil, managed by the Foundation of Support to HEMOSC and CEPON (FAHECE). The high dose rate brachytherapy outpatient clinic started its activities in 2006 and was the only service to offer this type of care in the state until 2016. The service has a multidisciplinary team, including three nurses.

Women with Genital Neoplasms undergoing brachytherapy between 2018 and 2019 were included. These women composed two groups of interest: group 1 - women not hysterectomized and submitted to the procedure under intravenous anesthetic sedation (Propofol associated with Fentanyl); group 2 - hysterectomized women submitted to the procedure without anesthetic sedation or analgesia. Women under 18 years of age were excluded.

For the sample calculation, the number of women seen at brachytherapy at CEPON in the year 2017 was identified (151 women undergoing brachytherapy under sedation and 61 without anesthesia/analgesia) and a sampling error of 10%, confidence level of 95% was applied to each inclusion group, thus, 59 participants were defined as sample for group 1 and 38 for group 2, totaling 97 women.

The selection of participants and data collection occurred before the beginning of the last brachytherapy session and followed the treatment scheduling order, articulated with the availability of the researchers for data collection (convenience), until reaching the number of inclusions in the study sample. It should be noted that the researchers were not professionals in the research setting.

Data collection was carried out between September 2018 and July 2019, including a structured instrument to record the answers obtained with the participants in an interview applied in a reserved environment and in a time interval that did not interfere with the start

time of the therapy scheduled by the technical team. The collection from the participants' medical records was also performed to identify clinical data.

The study variables were age, education, cancer topography and staging (I-IV), number of brachytherapy sessions prescribed, therapies performed at CEPON for the control of gynecological cancer, type of anesthetic sedation or analgesia applied during brachytherapy, and self-reported pain intensity (zero - 10).

Pain intensity was assessed in five moments: 1) before brachytherapy, 2) during the insertion of the applicators, 3) during ionizing radiation, 4) during removal of the applicators, 5) after the end of brachytherapy. For pain intensity assessment, the visual analog scale (zero - 10) was applied and the following classification was considered: no pain: zero; mild pain: one - two, moderate pain: three - six; severe pain: seven - 10[12]. After collection, the data were entered into Excel spreadsheets. The data entry was reviewed by a second researcher.

The categorical variables were represented by absolute and relative frequency. The proportions of the variable's degrees of education and cancer topography were compared between the stages by the chi-square test. When significant, the local analysis was checked by the adjusted standardized residuals analysis, emphasizing the categories with values greater than or equal to 1.96.

From the pain intensity score, two scenarios were defined, dividing two dichotomous variables: scenario 1) the first variable categorized as absence of pain (zero) vs. presence of pain (one - 10); scenario 2) the second variable categorized as absence or mild intensity (zero - two) vs. moderate or high intensity (score of three - 10). The proportions of pain intensity, with this dichotomization, were compared between the women submitted or not to sedation, at the five moments of brachytherapy (interaction between the two factors: sedation*moment), by the Generalized Estimating Equations model. The representation was performed by the proportion of pain and 95% confidence interval. The model was composed of an independent working correlation matrix, a robust estimator covariance matrix, and a probit binary distribution. When significant, the Bonferroni post-hoc test was used to identify which moments differed. The significance level adopted was 0.05. The analyses were performed in SPSS v.25 software.

Opinions 2,575,587 and 2,650,136 and Certificates of Ethical Submission and Consideration 61720216.1.0000.0121 and 61720216.1.3001.5355, from the proposer and co-participant, record the ethical approval of this study. Resolution 466/2012 was followed.

RESULTS

A total of 97 women were included in the study, 59 belonging to group 1 and 38 to group 2. The mean age equaled 52.7 years (±12.9; min-max. 25-84 years old). Most were aged ≥50 years, 59 (60.8%); complete/incomplete elementary education, 51 (52.6); in the cervix (uterine cervical neoplasm)topography, 71 (73.2%); stage II, 40 (46.5%); treated with teletherapy associated with chemotherapy followed by brachytherapy, 54 (55.7%); submitted to four brachytherapy sessions, not hysterectomized, 59 (60.8%); submitted to sedation therapy, 58 (59.8) (Table 1). We note that the findings presented in Table 1 associate the results obtained in the two groups investigated. Considering the similarities of the findings between the two groups, this presentation was chosen.

Table 1 - Clinical characteristics, age, and education level of the sample. Florianopolis, SC, Brazil, 2018-2019

Variáveis	Categories	n(%)
Age	<50	38(39,2)
	≥50	59(60,8)
Level of Education	No education/incomplete elementary school	29(29,9)
	Elementary school complete/High school	51(52,6)
	College incomplete/complete	17(17,5)
Cancer topography	Cervix (uterine cervical neoplasm)	71(73,2)
	Body of Uterus	25(25,8)
		1(1,0)
Staging (n=86)*	I	21(24,4)
	II	40(46,5)
	III	22(25,6)
	IV	3(3,5)
Therapeutics	Brachytherapy	2(2,1)
	Surgery+brachytherapy+surgery	8(8,2)
	Teletherapy+brachytherapy	1(1,0)
	Surgery+teletherapy+brachytherapy	16(16,5)
	Teletherapy+chemotherapy+brachytherapy	54(55,7)
	Surgery+teletherapy+chemotherapy+brachytherapy	16(16,5)
No. of brachytherapy sessions	3	38(39,2)
	4	59(60,8)
Hysterectomized	No	59(60,8)
	Yes	38(39,2)
Brachytherapy with sedation	No	39(40,2)
		58(59,8)

Descriptive analysis. *11 medical records without information.
Source: Authors (2019).

Age and education level were not significant (p>0.05). Significance was observed between cancer topography and staging (p<0.001); women diagnosed in the uterine body topography were associated with staging I, while in the cervix (uterine cervical neoplasm) topography they were associated with staging II (p<0.001). Hysterectomized women undergoing three brachytherapy sessions without anesthesia were associated with staging I (p<0.001), while non-hysterectomized women undergoing four brachytherapy sessions under sedation were associated with staging II and III (p<0.001) (Table 2).

Table 2 - Comparison between social and clinical variables. Florianópolis, SC, Brazil, 2018-2019

	Staging (n=86)				p
	I (n=21) n(%)	II (n=40) n(%)	III (n=22) n(%)	IV (n=3) n(%)	
Age					
<50 years old	7(33,3)	17(42,5)	9(40,9)	1(33,3)	0,911
≥50 years old	14(66,7)	23(57,5)	13(59,1)	2(66,7)	
Education level					
No education/incomplete elementary school	9(42,9)	9(22,5)	7(31,8)	1(33,3)	
Elementary school complete/High school	10(47,6)	23(57,5)	11(50)	1(33,3)	0,622
Tertiary incomplete/complete	2(9,5)	8(20)	4(18,2)	1(33,3)	
Topography of cancer					
Body of the Uterus	13(61,9)	4(10)	3(13,6)	0(0)	
Cervix (uterine cervical neoplasm)	8(38,1)	36(90)	18(81,8)	3(100)	**<0,001**
Vagina	0(0)	0(0)	1(4,5)	0(0)	
No. of brachytherapy sessions					
3	19(90,5)	8(20)	4(18,2)	0(0)	**<0,001**
4	2(9,5)	32(80)	18(81,8)	3(100)	
Hysterectomized					
No	2(9,5)	32(80)	18(81,8)	3(100)	**<0,001**
Yes	19(90,5)	8(20)	4(18,2)	0(0)	
Brachytherapy with sedation					
No	19(90,5)	8(20)	5(22,7)	0(0)	**<0,001**
Yes	2(9,5)	32(80)	17(77,3)	3(100)	

*Chi-square test. Underlined the analyses of adjusted standardized residuals greater than 1.96.
Source: authors (2019).

Regarding pain intensity, at moment 1, about half of the women reported moderate or severe pain, with group 1 complaining more than group 2. At moment 4, during the removal of the applicators, pain perception in group 1 increased, and in group 2 it remained like moment 3. It is worth mentioning that group 1 between moments 2 and 4 should have been under the effect of sedation, that is, should have no pain perception. The results show that sedation was not effective for two women (5%) at moment 2 and for 32 women (55.9%) now of removal of the applicators. At moment 5, after the end of brachytherapy, about 75% of the participants in groups 1 and 2 reported some intensity of pain, with moderate or severe pain prevailing. The totality of the findings is presented in Table 3.

Table 3 - Descriptive analysis of the proportions of pain intensity at each moment of brachytherapy. Florianópolis, SC, Brazil, 2018-2019

	Intensity (n=97)			
	Mild pain (1-2)	Moderate pain (3-6)	Severe pain (7-10)	Pain (1-10)
Moment	**n(%)**	**n(%)**	**n(%)**	**n(%)**
1	1(1)	22(22,7)	28(28,9)	51(52,6)
2	3(3,1)	6(6,2)	16(16,5)	25(25,8)
3	3(3,1)	10(10,3)	14(14,4)	27(27,8)
4	6(6,2)	23(23,7)	18(18,6)	47(48,5)
5	11(11,3)	38(39,2)	24(24,7)	73(75,3)
Group 1: brachytherapy with sedation (n=58)				
1	1(1,7)	16(27,6)	15(25,9)	32(55,9)
2	0(0,0)	1(1,7)	1(1,7)	2(5,0)
3	1(1,7)	7(12,1)	5(8,6)	13(23,7)
4	2(3,4)	15(25,9)	15(25,9)	32(55,9)
5	6(10,3)	22(37,9)	14(24,1)	43(74,6)
Group 2: brachytherapy without analgesia (n=39)				
1	0(0,0)	6(15,4)	13(33,3)	18(47,4)
2	3(7,7)	5(12,8)	15(38,5)	22(57,9)
3	2(5,1)	3(7,7)	9(23,1)	13(34,2)
4	4(10,3)	8(20,5)	3(7,7)	14(36,8)
5	5(12,8)	16(41,0)	10(25,6)	29(76,3)

Descriptive analysis. 1: before brachytherapy; 2: during insertion of the applicators; 3: during ionizing radiation; 4: during removal of the applicators; 5: after completion of brachytherapy.
Source: Authors (2019).

Table 4 presents the comparisons of the proportions of pain intensity between the variable's sedation (yes or no) and the five moments of brachytherapy and shows significance of pain perception in the interaction between moment/sedation ($p<0.001$). In scenario 1, fixing the women who underwent brachytherapy without sedation, the proportion of pain perception of intensity one - 10, at moment 1, 3 and 4 are lower when compared to the proportions of pain perception at moment 5. When comparing the reports of pain at moment 1 with the other moments, it was identified that at moment 2 there was an increase of 10.3% in the report of pain, while at moments 3 and 4 there was a reduction of about 10% and at moment 5 an increase of 30.8%. Similar proportions were found when the report of moderate or severe pain was fixed at scenario 2.

Table 4 - Comparison of the proportion of pain intensity reported by women undergoing brachytherapy with or without sedation, moments, and the interaction (sedation*moment), according to scenario 1 and scenario 2. Florianópolis, SC, Brazil, 2018-2019

Moments	Sedation		
	No	Yes	Total
	% [CI 95%]		
Scenario 1 - Pain perception proportions: intensity from 1 to 10			
1 (n=51)	48,7a	55,2a	52
	[33,5; 64,1]	[42,3; 67,5]	[41,8; 61,9]
2 (n=25)	59,0Aab	3,4Bb	21,3
	[43,2; 73,4]	[0,7; 11,4]	[12,3; 33,4]
3 (n=27)	35,9a	22,4c	28,8
	[22,2; 51,7]	[13,2; 34,5]	[20,3; 38,6]
4 (n=47)	38,5a	55,2a	46,7
	[24,4; 54,2]	[42,3; 67,5]	[36,7; 57,0]
5 (n=73)	79,5b	72,4a	76,1
	[64,7; 89,8]	[59,9; 82,6]	[66,6; 83,9]
Total	52,9	36,5	
	[44,0; 61,6]	[28,4; 45,4]	
Scenario 2 - Proportion of painful perceptions: intensity from 3 to 10			
1 (n=50)	48,7ab	53,4a	51,1
	[33,5; 64,1]	[40,7; 65,9]	[41; 61,1]
2 (n=22)	51,3Aab	3,4Bb	18,6
	[35,9; 66,5]	[0,7; 11,4]	[10,4; 29,9]
3 (n=24)	30,8a	20,7c	25,5
	[18; 46,4]	[11,9; 32,6]	[17,5; 35]
4 (n=41)	28,2Aa	51,7Ba	39,5
	[16; 43,7]	[39; 64,3]	[29,8; 49,9]
5 (n=62)	66,7b	62,1a	64,4
	[51; 79,9]	[49,2; 73,7]	[54,3; 73,6]
Total	44,8	33	
	[35,7; 54,3]	[25,4; 41,4]	

Generalized Estimating Equations Model. P value interaction >0.001 (for both analyses). a, b, c: (vertical comparison) distinct letters represent different proportions between moments when we fixed the sedation/pain perception response category; A, B: (horizontal comparison) distinct letters represent different proportions between sedation/pain perception when we fixed the moment responded.
Source: Authors (2019).

Fixing the women submitted to sedation, the proportion of pain perception at time 1, 4 and 5 are different, higher, than the percentage at time 3 and these different from the percentage at time 2. Fixing time 2, there was a difference between the proportion of pain

perception between the two groups.

In scenario 2, fixing the women not submitted to sedation, we can say that the proportions of presence of pain at moment 3 and moment 4 are smaller when compared with moment 5. As for the women submitted to sedation, the proportion of presence of pain at moment 1, moment 4 and moment 5 are different, larger, from the percentage of presence of pain at moment 3 and these different from the percentage of response at moment 2. At time 4, women not submitted to sedation have a pain presence proportion of 28.2%, while women submitted to sedation report a proportion of 51.7%, opposite percentages from time 2.

DISCUSSION

The methodology outlined allowed the assessment of pain intensity perceived by women undergoing pelvic brachytherapy with or without anesthetic sedation. Pain assessment applied with the use of a visual analog scale at the time of therapy is not a practice in the study setting; however, this type of intervention corroborates what is recommended by the American Brachytherapy Society, which includes the nurse's role in pain assessment and control[6]. It is also registered that the National Policy for Cancer Prevention and Control in the Health Care Network for People with Chronic Diseases (Brazil) provides the patient with the right to integral care and to timely and safe treatment[13]. Therefore, it is understood that for comprehensive care, pain control is essential.

The prevalence found of cervical and uterine neoplasm cases is like the global epidemiology published by the International Agency for Research on Cancer[1], as is the average age. A meta-analysis points out that the highest risk of uterine cervical neoplasmis related to women over 50 years of age and points out that about 20 years are needed for the development of the disease[14]. This condition allows screening for prevention of cancer cases in this topography. Regarding staging, the findings are like those described by a review study that states the prevalence of uterine cervical neoplasm in stages I-III, with emphasis on stage II, when there is invasion of the disease[15].

Another review study, developed in the United States, reveals that women with endometrial neoplasm, the main topography of neoplasm of the uterine body, are diagnosed over the age of 50[16] and, a descriptive Brazilian study shows that the older the woman gets, the frequency of health follow-ups decreases[17], contributing to late diagnosis.

In the staging of endometrial cancer, in this study and in the world, stage I prevails[18]. However, in developed countries, the prevalence is higher in the endometrium topography, followed by the cervix(uterine cervical neoplasm)[19], a sequence inverse to the findings observed in this investigation, which depicts uterine cervical neoplasmsscreening falling short of the guidelines for early detection/treatment of non-malignant neoplastic diseases. Unfortunately, most women in developing countries do not have access to cervical cancer prevention programs, resulting in the maintenance of high rates of morbidity and mortality.

Regarding the level of education, a Brazilian study indicates a higher percentage of women with less education, 217 women (55.6%) with incomplete elementaryeducation[20] , differing from the findings presented here. It is inferred that this result is due to the inclusion of women living in Santa Catarina, one of the Brazilian states with lower illiteracy rates[21]. However, higher education did not prevent advanced disease, identified by the staging found.

The hypothesis that therapy causes pain in women undergoing brachytherapy with (group 1) or without (group 2) anesthetic sedation was confirmed. Furthermore, the results show that pain perception is significant before the start of brachytherapy in both investigated groups. Therefore, it can be stated that the previous clinical condition and the

therapeutic procedure add to the triggering of the pain mechanism[10].

As for the results related to pain perception, three aspects are highlighted. Firstly, the pain complaints already existed before the beginning of brachytherapy. Previous pain is associated with the oncologic disease, the treatments and the physical, psychological, emotional, spiritual, and social damages that make up each woman. Thus, the evaluation and control of pain must be a priority throughout the course of treatment, besides being a right of the patient and a duty of the health team.

The evaluation of pain intensity and characteristics, such as the pain control achieved, requires the institution of better therapeutic approaches, including institutional protocols standardized according to scientific evidence[10]. Oncological diseases cause pain in about 70% of patients[22]. In pelvic brachytherapy, the woman may already have oncological pain prior to the treatment, as confirmed in the results presented, but the pain felt is added to the pain triggered by the procedure and its applicators, the related anxiety and suffering.

The emotional discomfort is linked to shame in front of the medical professional (male), the feeling of loneliness and helplessness felt in the brachytherapy room, as well as sadness for feeling mutilated[23]. In this context, pharmacological and non-pharmacological interventions are necessary[24], and the nurse's role becomes essential in the continuous assessment of pain and its control. In this sense, to the nurses of the study scenario, the implementation of a protocol for pain assessment in brachytherapy, continuously applied to all patients. A systematic review showed that an important tool that helps the team in the interpretation of pain and in the analysis of the efficacy or deficiency of the anesthetic/analgesic procedures adopted is the visual analog scale[5], widely used by nurses.

The second aspect in focus is brachytherapy as a procedure, because for its performance, the woman is exposed to physical and psychological stressors, causing, or contributing to the perception of pain. A review study points out that 26% of women undergoing pelvic brachytherapy present severe uterine pain even under conscious sedation. This evidence is like the results of this investigation[5]. Thus, some drug procedures are recommended by two other review studies: neuraxial anesthesia, by cervical block; use of cervical dilators with or without associated sedation; oral medications such as sodium diclofenac, pentazocine hydrochloride, morphine sulfate, hydroxyzine hydrochloride and haloperidol; conscious sedation using intravenous opioid associated with midazolam; propofol, fentanyl, oxycodone and lumbar epidural anesthesia and spinal anesthesia in hospitalized patients[5,25].

The third aspect highlighted in this discussion is whether the woman was submitted to the therapy under sedation, because both group 1 and group 2 had increased pain perception. Even in those under the effect of sedation and analgesics, pain perception during radiation and at the removal of the applicators was present. This evidence shows that the effect of sedation was not effective during the introduction to and removal from the applicators in the study setting. It is also noteworthy that some sedated women go from a state of total absence of pain, allowed by sedation, to moderate or severe pain (physical stressors) when the applicators have not yet been removed. Added to being semi-dressed, in a gynecological position, in a room by themselves, watched by monitors by several professionals (psychological stressors). The professionals justified the finding by pointing out that considering the number of women to be attended and the anesthetic recovery time, the end of sedation was anticipated.

In this context, it is evident the need to evaluate the protocol adopted for effective sedation, articulating it with the time needed for the procedure and anesthetic recovery, ensuring effective pain control from the introduction to the removal of applicators during brachytherapy. After the presentation of the findings in the care setting, the team revised its procedures; currently, most women are remaining sedated until the removal of the applicators. From this perspective, it is observed that the study has already contributed to better health care. Further investigations are recommended to compare the evidence.

Finally, one can infer multiple factors that contribute to the mechanism of pain in pelvic brachytherapy, mainly coming from the oncologic disease, insertion of applicators in group 2, removal of applicators in group 1, and pain perceived at the end of the procedure in groups 1 and 2. In addition, there is stress and anxiety, which were not investigated in this study, but other studies state their contribution[5,11].

For hysterectomized women, considering that the greatest pain experienced by them covers the period before the therapy, during the insertion of applicators and after the procedure, conducts for pain assessment could reduce this damage or discomfort. Regarding the removal of applicators, a study[24] points out that it is the stage of treatment that causes the greatest physical discomfort, that the intensity of pain perceived coincides with that felt during insertion, and that the change in state from being sedated to being awake suddenly during removal of the applicator contributes to the perception of pain.

To reduce harm to women, inhalation of nitrous oxide is recommended, considering its short action, ease of administration and rapid effect due to absorption into the bloodstream through the pulmonary alveoli[24]. Other measures are indicated for pain control in brachytherapy, such as: use of oral anxiolytic medication, emotional support, visual or auditory distraction, even with the use of analgesics altering the level of consciousness, information and health education, attention and welcoming of the team[5,26].

The results of this study may apply to women with the same clinical condition and submitted to brachytherapy with similar anesthetic intervention. However, there is no standardized protocol for use in all services(6), external validity is influenced by the anesthetic/analgesic procedure adopted and the best pain control of the underlying disease.

As a limitation of this study, we point out the selection of participants without guaranteeing the heterogeneity of the sample. Considering that the researchers were not professionals in the study setting, the data collection moments needed to articulate the researchers' schedules and the brachytherapy schedules, which often did not occur at the predetermined times.

CONCLUSION

Among gynecological neoplasms, the participants presented exclusively with cervical-uterine diseases, and pain was always present during treatment. Approximately 75% of the participants reported some intensity of pain. In view of the evidence found and presented to the professionals, the team changed the duration of the anesthetic procedure (intravenous sedation) for non-hysterectomized women. Better medical and nursing decision making for pain control is recommended to hysterectomized women with pain prior to brachytherapy.

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Corresponding author:
Luciana Martins da Rosa
Universidade Federal de Santa Catarina – Florianópolis, SC, Brasil
E-mail: luciana.m.rosa@ufsc.br

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