

Cold Compresses As An Intervention To Reduce Post Tonsillectomy Pain Intensity

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ABSTRACT

Introduction: Tonsillectomy is the most common procedure performed to treat tonsillitis. One of the clinical manifestations of this procedure is pain which occurs mediator released during surgery stimulates pain nerve endings, so pain management is necessary. If there is pain and swelling that occurs <48 hours, it is highly recommended to apply a cold compress

Objectives: The aims of this study to analyzed cold compresses to reduce pain intensity in post-tonsillectomy patients

Methods: This research design was used a pre experiment with a one group pre test post test design approach, that conducted for months. July -August 2024, involving 17 post-operative patients in Room H2 RSPAL dr. Ramelan Surabaya, using purposive sampling. Data were analyzed using Friedman test.

Results: The results showed that in the first 3 hours after tonsillectomy, the intensity of pain which was in range of 5-7 (median 6) decreased to 3-5 (median 3) after being given cold compress therapy for 10-15 minutes, with a p-value of 0.001 which indicated that this decrease is statistically significant. This showed that cold compresses are effective in reducing postoperative pain

Conclusions: This indicates that cold compresses are effective in reducing pain consistently at different times after surgery. The use of cold compresses as a non-pharmacological pain management method may be considered as part of the post-operative care protocol.

Keywords: Cold compress; Pain; Tonsillectomy

Introduction

Tonsillectomy is a safe procedure for patients with tonsillitis, but it will cause complications such as post-tonsillectomy pain, difficulty swallowing, dry throat, infection, bleeding, airway obstruction, nasopharyngeal obstruction, pulmonary edema, fever, jaw pain, otalgia, foreign body aspiration (Damanik, Lubis, and Mutiara 2019). Pain after tonsillectomy occurs because the mediators released during surgery stimulate pain nerve endings, so pain management is necessary (Adi and Sanjaya 2020). Interventions that can reduce that pain response are pharmacological and non-pharmacological. One of the intervention to reduce pain with non-pharmacological techniques include using cold compresses (Malorung, Inayati, and Sari 2022).

The World Health Organization (WHO) does not release definite data regarding the number of tonsillitis cases in the world (Arifin, Aziz, and Sumariyem 2022). In Indonesia, tonsillitis cases according to the Indonesian Ministry of Health reached 23%. From epidemiological data in Indonesia, chronic tonsillitis is in the second highest position after acute nasopharyngitis (Kandhi and Prihandini 2023). Data for the last 3 months from February to April 2024 for chronic tonsillitis sufferers recorded in medical records in room H2 RSPAL dr. Ramelan Surabaya accounted for 30 patients (24%) out of 125 patients.



Cold compresses can relieve pain. Cold compresses reduce prostaglandins which increase the sensitivity of pain receptors and other substances at the wound site by inhibiting the inflammatory process. Apart from that, cold compresses can also reduce swelling and inflammation by reducing blood flow to the area (vasoconstriction effect) (Hardianto, Ayubbana, and Inayati 2022).

Setyawati, (2018) in Piko, Elyta, and Karomah (2024) said that cold compresses can be given around the painful area. In tonsillectomy patients, cold compresses are applied to the neck area, especially on the blood vessels, pharyngeal constrictor muscle and glaucopharyngeal nerve. Applying a cold compress for 10-20 minutes, this can reduce the intensity of pain, reduce blood flow, reduce edema, cell metabolism, and the transmission of pain to nervous tissue will decrease. From this explication, reducing pain is the main priority for tonsillitis patients with tonsillectomy. Nurses have an important role in handling post-tonsillectomy procedures. The role of nurses as educators is useful for improving health services and increasing patient satisfaction through increasing education and patient involvement. So it is important to carry out research regarding the administration of cold compresses as an intervention to reduce pain intensity in tonsillectomy patients.

Methods

The type of this research used a quantitative research with pre-experimental method with one group pretest post-test design using the Friedman test. The population in this study were all post-tonsillectomy patients in Room H2 RSPAL dr. Ramelan Surabaya in July-August 2024, with sample size of 17 people. Sampling was carried out using non-probability sampling techniques purposive sampling. Sample determination was carried out using the following criteria such as patients aged 17-45 years (adolescents-adults), do not have cold allergies, do not have hematological disorders, and are not suspected of malignancy. Using the numerical pain scale measurement and using an ice gel tool that was put in the freezer 24 hour before, the cold compress intervention is carried out 2 times in 24 hours, namely 3 hours after the patient in the room (post surgery) and 3 hours after the first intervention, carried out for 10-20 minutes. Data were analyzed using Friedman test.

Results

Tabel 1 Distribution of Respondents Based on Gender, Age, Education, Operation History, and Comorbid Diseases (n=17)

Characteristics	Identification	Frequency	%
Gender	Man	10	58,8
	Woman	7	41,2
Age	17-25	12	70,6
	26-35	3	17,6
	36-45	2	11,8
Education	Senior High School	13	76,5
	Bachelor Degree	3	17,6
	Master Degree	1	5,9
Operation History	Once	0	0
	Never	17	100
Comorbid Disease	Yes	0	0
	No	17	100



Table 1 explains the characteristics of respondents in this study which are presented in 5 characteristics including gender, age, education, history of surgery and comorbid diseases. The results of research from 17 respondents showed that the majority of respondents were male, 10 people (58.8%). The majority of respondents were in the 17-25 year age range, 12 people (70.6%). In terms of education, the majority of respondents had a high school education, 13 people (76.5%). Based on their history of undergoing surgery, all respondents had never had surgery before (100%), and none of the respondents had comorbidities (100%).

Table 2. Difference of pain intensity of the respondents before and after cold compress therapy (day-1 and day-2) (n=17)

Pain Intensity (PI)	Median	Min-Max	<i>p</i>
Initial (before cold compress therapy)	6	5-7	0.001 (Friedman test)
Post 1 (after cold compress therapy)	4	3-5	
Post 2 (after cold compress therapy)	3	1-4	

In table 2 it can be explained that in the first 3 hours after tonsillectomy, the intensity of pain which was in the range of 5-7 (median 6) decreased to 3-5 (median 3) after being given cold compress therapy for 10-15 minutes, with a p-value of 0.001 indicating that this decrease is statistically significant. 3 hours after the first intervention, pain intensity decreased again to 1-4 (median 3) after being given cold compress therapy, with a p-value (0.001).

Discussion

Post-operative pain is one of the problems experienced by patients after surgery which is caused by the presence of damaged tissue due to surgical procedures which will open the skin thereby stimulating pain impulses to activated sensory nerves which are transmitted to the posterior horn in the spinalis which then creates a perception of pain from the brain. delivered by afferent nerves so that it will stimulate chemical mediators of pain including prostaglandins, histamine, serotonin, bradykinin, acetyl choline, substance p, leukotrienes (Malorung et al. 2022). Judging from the surgical experience, all respondents had never experienced surgery before, where someone who had experienced pain or witnessed the suffering of someone close to them when experiencing pain tended to feel threatened by the pain event that would occur compared to other individuals who had never experienced it (Hardianto et al. 2022).

This research is in line with several previous studies which show that cold compress therapy can help reduce pain by reducing blood flow, slowing nerve conduction, and reducing the inflammatory response in areas that have experienced surgical trauma. For example, a study by Terkawi (2017) found that similar results regarding the effectiveness of cold compresses in post-operative pain management in various types of surgery. Wati & Ernawati (2020) in Handayani, Imamah, and Indrastuti (2024) explained in their research that the ice gel pack technique used to provide a comfortable stimulus is able to reduce the source of depression and excessive anxiety, so that patients are able to control the sensation of pain and are able to improve body function.

One study showed that patients who received cold compresses post-tonsillectomy experienced a marked reduction in pain levels, with one patient's pain scale dropping from 4 to 0 after three days of treatment (Piko et al. 2024). Cooling the tonsil fossa and pharyngeal mucosa with cold water during tonsillectomy will reduce post-tonsillectomy pain easily and effectively (Shin et al. 2014).

Ice compresses cause vasoconstriction (narrowing of the blood vessels) in the application area. With narrowing of the blood vessels, blood flow to the traumatized area is reduced. This



reduces the accumulation of fluid and inflammatory mediators such as prostaglandins, bradykinin, and histamine that cause pain. In this way, the inflammatory response which often aggravates pain can be minimized. Cold temperatures have the ability to slow down the speed of nerve conduction in sensory nerve fibers. This means that the pain signals sent by nerve fibers to the brain are slowed or inhibited, ultimately reducing the perception of pain. This effect mainly acts on the A-delta nerve fibers, which are responsible for the transmission of acute pain. Cold temperatures also reduce the metabolic activity of local tissue around the surgical wound, thereby reducing the need for oxygen and the production of chemicals that can worsen pain. With lower metabolism, the risk of tissue damage due to hypoxia or further inflammation is also reduced.

Edema (swelling) is often one of the causes of post-operative pain, including after tonsillectomy. By vasoconstricting and reducing inflammation, ice packs help prevent or reduce edema. The lack of excess pressure from swelling also reduces stimulation of pain receptors in the affected area. Cold compresses can also provide a temporary local anesthetic effect. Cold causes a decrease in the sensitivity of nerve receptors in the skin and underlying tissue, so that the patient feels more comfortable and reduces the sensation of pain. Anggraini and Fadila (2021) explained in his research that giving cold compresses can be used as a non-pharmacological management in reducing pain because giving cold compresses can have a physiological effect in reducing tissue inflammation and reducing edema in post-fracture surgery patients so that the pain felt by the patient is reduced apart from giving painkillers. painful.

Conclusion

The conclusion from the results of this study shows that cold compress therapy has a significant effect in reducing the intensity of post-tonsillectomy pain. This indicates that cold compresses are effective in reducing pain consistently at different times after surgery. The use of cold compresses as a non-pharmacological pain management method may be considered as part of the post-operative care protocol.

Ethics approval and consent to participate

This current research had received ethic approval from the Health Research Ethics Committee of RSPAL dr. Ramelan Surabaya Hospital, Indonesia, with a Certificate of Ethical Eligibility Number: 74/EC/KEP/2024, dated 17th July, 2024.

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