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NOTE PREVIEW ARTICLE

ICE AND WATER EFFICIENCY IN THE MANAGEMENT OF THIRST IN THE IMMEDIATE POSTOPERATIVE PERIOD: RANDOMIZED CLINICAL TRIAL

EFICÁCIA DE GELO E ÁGUA NO MANEJO DA SEDE NO PÓS-OPERATÓRIO IMEDIATO: ENSAIO CLÍNICO RANDOMIZADO

EFICACIA DEL HIELO Y DEL AGUA EN EL MANEJO DE LA SED EN EL PERÍODO POSTOPERATORIO INMEDIATO: ENSAYO CLÍNICO ALEATORIO

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ABSTRACT

Objective: to assess the efficacy of ice compared with water at room temperature in relief of thirst in the immediate postoperative period. ***Method:*** experimental analytical study, parallel randomized controlled clinical trial type. The population will be composed of adult patients in the immediate postoperative period and the sample will consist of 208 participants randomized into control group (10 mL of water at room temperature) and experimental group (10 mL ice popsicle). There will be five stages for assessing thirst intensity and subsequent intervention, with 15-minute interval for one hour. The research project was approved by the Research Ethics Committee, CAAE 16707313.5.0000.5231. ***Expected results:*** the confirmation of the hypothesis that ice popsicles are more effective to alleviate thirst by stimulating oropharyngeal receptors sensitive to temperature will allow the effective management of thirst with a small volume of liquid, which is desirable in the immediate postoperative period. ***Descriptors:*** Thirst; Ice; Water; Perioperative Nursing; Recovery Room.

RESUMO

Objetivo: avaliar a eficácia do gelo em comparação com a água em temperatura ambiente no alívio da sede no pós-operatório imediato. ***Método:*** estudo analítico experimental, tipo ensaio clínico controlado randomizado, paralelo. A população será de pacientes adultos em pós-operatório imediato e a amostra será de 208 participantes randomizados em grupo controle (10 mL de água em temperatura ambiente) e grupo experimental (“picolé” de gelo de 10 mL). Haverá cinco momentos de avaliação da intensidade da sede e subsequente intervenção, com intervalo de 15 minutos durante uma hora. O projeto de pesquisa foi aprovado pelo Comitê de Ética em Pesquisa, CAAE 16707313.5.0000.5231. ***Resultados esperados:*** a comprovação da hipótese de que o picolé de gelo seja mais eficaz para mitigar a sede por estímulo de receptores orofaríngeos sensíveis à temperatura permitirá o manejo eficaz da sede com volume pequeno de líquido, o que é desejável no pós-operatório imediato. ***Descritores:*** Sede; Gelo; Água; Enfermagem Perioperatória; Sala de Recuperação.

RESUMEN

Objetivo: evaluar la eficacia del hielo en comparación con el agua a temperatura ambiente en la satisfacción de la sed en el período postoperatorio inmediato. ***Método:*** estudio analítico experimental, tipo ensayo clínico controlado aleatorio paralelo. La población estará compuesta por pacientes adultos en el período postoperatorio inmediato y la muestra será de 208 participantes aleatorizados a grupo control (10 mL de agua a temperatura ambiente) y grupo experimental (helados palito de hielo de 10 mL). Habrá cinco etapas de evaluación de la intensidad de la sed y la intervención posterior, con un intervalo de 15 minutos durante una hora. El proyecto de investigación fue aprobado por el Comité de Ética en Investigación, CAAE 16707313.5.0000.5231. ***Resultados esperados:*** la comprobación de la hipótesis de que el helado palito de hielo es más eficaz para aliviar la sed por estimulación de los receptores orofaríngeos sensibles a la temperatura permitirá el manejo eficaz de la sed con un pequeño volumen de líquido, lo cual es deseable en el período postoperatorio inmediato. ***Descriptores:*** Sed; Hielo; Agua; Enfermería Perioperatoria; Sala de Recuperación.

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INTRODUCTION

Thirst is a subjective symptom frequently reported by patients; however, it is little valued, assessed and treated by the health team,[1-4] considering its high incidence in the immediate postoperative period (IPO), which varies between 43.8 and 75%.[5-6] The sensation of thirst disappears long before the water ingested is absorbed and the osmotic balance is reestablished, i.e., satiety begins before the real absorption of water by the body.[7] This indicates that, for understanding the perception of thirst, in addition to the cellular homeostatic mechanisms, neural reactions and the role of peripheral osmoreceptors should be taken into account.

Changes in plasma osmolarity are detected by the osmoreceptors, which have a regulatory role in the perception of thirst and in maintaining circulating levels of some hormones essential for managing thirst. Among these hormones are: antidiuretic (ADH); atrial natriuretic peptide: oxytocin; and the renin-angiotensin-aldosterone system.[8-9] The main areas involved in controlling thirst and antidiuresis at cerebral level, as demonstrated by means of neuroimaging, are the hypothalamus and the forebrain,[8-9] as well as the areas of the posterior cingulate gyrus and the cerebellum,[7,10] called thirst control system.

Multiple factors are responsible for the sensation of thirst in the IPO period. Some of these factors are fasting, the drugs used during anesthesia, endotracheal intubation, surgical intraoperative bleeding, dehydration, and the patients' age.[2, 6, 8-9, 11-20] In addition to the receptors of the brain—which may be responsible for early interruption of the perception of thirst—evidence suggests the existence of receptors in the mouth and the upper gastrointestinal tract that promote the feeling of satiety. Neural activity involved in swallowing and the presence of oropharyngeal and gastric receptors are effective in detecting or measuring the volume of liquid to be swallowed until satiety.[9, 21-2]

The osmoreceptors present in the mouth and the esophagus respond to different chemical, tactile, pressure and temperature stimuli and only the presence of cold liquid in the mouth reduces the perception of thirst. This fact indicates that cold fluids reduce thirst with more effectiveness than hot or warm fluids.[9, 21-3] There is evidence that ice is effective in relieving thirst in surgical patients, because, by stimulating the oral receptors sensitive to cold, ice decreases the need to ingest large volumes of liquids to satisfy thirst. This way, the risk of bronchoaspiration due to gastric fullness is avoided and discomfort with dry mouth is reduced.[24-6]

Preliminary evidence, therefore, indicates that the use of ice chips have greater efficacy than water at room temperature in relieving thirst.[5,24-5] However, there is no scientific evidence from controlled studies with results that can be generalized with respect to a safe volume and adequate frequency of ice administered to reduce thirst in the IPO period.

Considering that the gold standard for the study of a symptom is based on individuals' perceptions and their reports,[27] this study is justified in order to assess the effectiveness of ice compared with water at room temperature in relieving thirst in the IPO period. The hypothesis of the study is that ice has 20% greater effectiveness than water to relieve thirst in the IPO period.

METHOD

The research project was submitted to the Master's Degree Program in Nursing of the State University of Londrina (UEL). This is an experimental analytical research, parallel randomized controlled clinical trial type using the single-blind technique. Random clinical trials are the gold standard among the research designs used in the assessment of health interventions. They are a powerful tool for obtaining evidence in clinical practice.[28-9]

The study will be conducted in the operating room of a tertiary level teaching hospital of the State of Paraná, Brazil. It is a public institution with 313 beds of the Unified Health System (SUS). The surgical center has seven operating rooms and an average of 500 surgeries are performed per month, with an estimated 75% incidence of thirst in adults during the IOP period in the anesthetic recovery room in 2010.[5]

The population of the study will consist of adult patients of both sexes in the IPO period that underwent elective and urgency surgeries. The inclusion criteria for participants are: aged between 18 and 65 years; undergoing more than eight-hour fasting; expressing thirst spontaneously or stimulated with intensity greater than or equal to three according to the visual analogue scale;[30] receiving opioids or anticholinergics in the transoperative period; duration of anesthesia exceeding one hour; being in anesthetic recovery both in the anesthetic recovery room and the operating room; having been approved in the assessment of the Protocol for Safe Thirst Management

(PSTM);[2] and signing an informed consent form during the preoperative period. The exclusion criteria will consider patients who have intake or swallowing restrictions.

An online application was used for the calculation of the sample size of this study (http://www.lee.dante.br/pesquisa/amostragem/qua_2_medias.html). Thus, on the basis of a two-tailed hypothesis test, using a standard deviation of 1.50, and having as a reference a study[24] that found a difference of 2.89 between the study groups (clinical significance), with a test power of 90% test and significance level of 0.05, the sample size will be of 104 participants for each group, making a total of 208 participants.

Simple and balanced (1:1) randomization will determine two groups, the experimental group (ice popsicle) and the control group (water at room temperature). This procedure will be carried out through a list generated by the GraphPad Software that will determine the group in which the participants will be allocated. The concealment of allocation will be performed through the use of individual opaque envelopes numbered externally in sequence, containing information of the group randomly defined. This step will be carried out by a researcher who will not take part in data collection.

The primary clinical outcome of interest will be the change in the intensity of the final thirst with respect to the initial thirst. The secondary clinical outcome will be reaching the point of satiety over one-hour assessment presented by the experimental and control groups. The independent variable of the study will be the strategies ice popsicle or water. The dependent variable will consist of the intensity variation of final thirst minus the intensity of initial thirst.

The data collection procedure will be as follows:

1. Patients in the preoperative period that meet the selection criteria "age" and "time of fasting" will be invited to participate in the research;

2. Patients in the IPO period that meet the other criteria for inclusion will participate in the study through random and concealed allocation in the ice popsicle or water groups;

3. Thirst intensity will be measured within the range from 1 to 10 according to the visual analogue scale.[30]

4. The patients will be assessed according to the following criteria before each intervention: level of awareness; airways protection capacity; and absence of nausea and vomiting, according to the PSTM.[2]

5. The usual activities adopted by the nursing staff of the anesthetic recovery room will be maintained for the control group that will receive 10 mL mineral water at room temperature in a syringe. The experimental group will receive an ice popsicle made of 10 mL mineral water;

6. The ice popsicles will be made according to the predetermined volumes and packed in the freezer of the anesthetic recovery room at the institution researched. The block of ice will be supported by a stick, allowing the patients to control the intensity of cold conferred by the ice for their comfort;

7. This procedure will be repeated every 15 minutes, with data collection occurring within the first hour of anesthetic recovery, or in case of refusal on the part of the patient/expression of thirst satiety before the completion of one-hour assessment;

8. The procedures for assessing thirst intensity and the application of the PSTM will be conducted by researcher No. 1 and the intervention (water or ice popsicle) will be performed by researcher No. 2, aiming at keeping the single-blind design.

For processing and analyzing the data, a database will be structured in an Excel 2010® worksheet and the statistical analyses will be performed using the Statistical Product and Service Solutions software (SPSS®, version 20.0). Considering the level of 5% significance for the research, the ratio of prevalence will be presented through 95% confidence interval. The results will be presented in tables and figures.

In accordance with Resolution No. 466/12 of the National Health Council, the research project was submitted to the Committee of Ethics in Research Involving Humans of the State University of Londrina and it was approved under favorable opinion CAAE 16707313.5.0000.5231.

EXPECTED RESULTS

In face of the high incidence of thirst in the IPO period and considering the lack of evidence with respect to safe and effective strategies for the management of thirst, this study represents an unprecedented approach that will allow for a greater humanization of care provided to patients who have thirst. If the use of the ice popsicle proves to be effective, it can provide relief of thirst with small volume of liquid, representing a viable strategy for the management of thirst in the IPO period. It will also enable the participants to have control over the intensity of the cold in their mouths. The study may also help defining the time required to reach

participants' satiety, as well as defining whether smaller liquid volumes will be sufficient for the relief of thirst.

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