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A COMPARATIVE STUDY TO EVALUATE THE EFFECTIVENESS OF MOIST HEAT FOMENTATION AND ICE PACK APPLICATION ON THROMBOPHLEBITIS AMONG PATIENTS RECEIVING IONOTROPIC INFUSION AT SELECTED HOSPITAL COIMBATORE

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ABSTRACT

The main aim of the study was to evaluate the effectiveness of moist heat fomentation and ice pack application on thrombophlebitis among patients receiving ionotropic infusion. True experimental pre-test post-test design was adopted. The study was conducted in the coronary and medical intensive care unit of Sree Abirami Hospital, Coimbatore. 60 samples (30 each in experimental group I and II) were selected using simple random sampling technique. The conceptual framework selected for the study was based on Wieden bach's Helping Art of Clinical Nursing Theory (1970). Pre-test was done for both groups using semi- structured interview schedule and modified visual phlebitis scale. The intervention given was moist heat fomentation, twice daily with duration of 15 minutes and ice pack application twice daily of 15 minutes for 3 consecutive days. Post-test was conducted in both groups, after 3 days of pre-test by using same scale. The data were analyzed using descriptive and inferential statistics.

KEYWORDS

Effectiveness, Moist heat fomentation, Icepack application, Thrombophlebitis and Ionotropic Infusion.

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INTRODUCTION

Health is the state of being free from illness or injury. It maintains good physical, mental and social well being of the individual. An important way to maintain our personal health is to have healthy diet, exercise to keep the physique fit and sleep adequately to make us stay active and confident with which we can be more successful. Once our health is not properly maintained due to the lifestyle choices, environmental and biomedical issues may lead to health illness that an individual must acquire

hospitalization to recover from the diseases. The patients who are hospitalized might need intravenous cannulation for the purpose of fluid administration, parenteral nutrition,

Medication and blood products to improve their health status. The placement of an intravenous cannula can have harmful effect, the most common complication being thrombophlebitis related to inflammation of the tunica intima of the superficial vein due to irritation of the mechanical, chemical and bacterial sources, which presents as a painful in duration, erythema and palpable venous cord. It is important for the nurse to be aware of the potential for injury as a result of medication or fluid leakage into the tissue and damage to vein can result in thrombophlebitis. Nurses have more responsibility to prevent and treat the occurrence of complication of thrombophlebitis.

The Infusion Nurses Society National Standards of Practice (2016)

Stated that the standards of practice should be followed by professional nurses with a wealth of clinical knowledge in all domains of infusion therapy. Nurse who administers intravenous medication must know its adverse effects and appropriate intervention to be taken before starting the infusion. Although many methods are used to reduce the complication of phlebitis but still continues to fail. Hence nurses have to be aware of and consider certain intervention to reduce phlebitis when managing intravenous therapy in patients.

Journal of Family Medicine and Primary Care, India (2019)

Conducted a prospective observational study on patients admitted at Air force hospital, Kalaikunda. In this study, 150 patients were recruited in medical and surgical division of the hospital. The factors studied were age, gender, site of insertion, place of insertion, cannulasize, intravenous medication and blood products. Incidence of phlebitis was found to be 31.4% The increased incidence rate of phlebitis was seen in individuals less than 60years of age, female, insertion in lower limb, large size catheter, inserted in emergency situation and intravenous drug administration. Phlebitisisanon going problem in present day clinical practice. Avoiding of

preventable risk factors, proper nursing care and daily inspection of catheter is needed for the prevention of Phlebitis. Nurse is the responsible person to provide the best care to the patients with intravenous infusion during their hospitalization. As an integral part of the health care team, the infusion nurse remains dedicated to evidence based practice and improving patient outcomes, so she should follow the guidelines for the care of the patients during intravenous infusion with the aim of reducing complication.

OBJECTIVES OF THE STUDY

To assess the level of thrombophlebitis among patients receiving ionotropic infusion.

To evaluate the effectiveness of moist heat fomentation on thrombophlebitis among patients receiving ionotropic infusion.

To evaluate the effectiveness of ice pack application on thrombophlebitis among patients receiving ionotropic infusion.

To compare the post test thrombophlebitis level for effectiveness of moist heat fomentation and icepack application on thrombophlebitis among patients receiving ionotropic infusion.

To associate the effectiveness of moist heat fomentation and icepack application on thrombophlebitis among patients receiving ionotropic infusion with their selected demographic variables.

RESEARCH HYPOTHESES

H1

There will be a significant reduction in thrombophlebitis score aftermoist heat fomentation among patients receiving ionotropic infusion.

H2

There will be a significant reduction in thrombophlebitis score after icepack application among patients receiving ionotropic infusion.

H3

There will be a significant difference between the reduction on thrombophlebitis score after moist heat fomentation and icepack application among patients receiving ionotropic infusion.

H4

There will be a significant association between pretest level of thrombophlebitis with moist heat fomentation and ice pack application among patient receiving ionotropic infusion and their selected demographic variables.

ASSUMPTIONS

Moist heat application may reduce the pain and discomfort of thrombophlebitis in patients receiving ionotropic infusion.

Icepack application may reduce the pain and discomfort of thrombophlebitis in patients receiving ionotropic infusion.

DELIMITATIONS

The study was limited only to patients with thrombophlebitis receiving inotropic infusion

The sample size was limited to 60

Data collection period was limited to 6 weeks.

The setting was limited to only one hospital.

Data on demographic variables of thrombophlebitis among patients receiving ionotropic infusion

Table No.1 reveals that with age in experimental group I, 14(46.67%) samples belong to 41 to 50 years, 10(33.3%) samples belong to 51 to 60 years and 5(16.6%) samples belong to 31-40 years and 1(3.3%) samples belong to 21-30 years. In experimental group II, 12 (40%) samples belong to 41-50 years, 8(26.6%) samples belong to 51-60 years, 7(23.3%) samples belong to 31-40 years and 3(10%) samples belong to 21-30 years. Regarding gender in experimental group I, 22(73.3%) of the samples were male and 8(26.6%) of the samples were female. In experimental group II, 24(80%) of the samples were male and 6(20%) of the samples were female. Regarding habits in experimental group I, 8(26.6%) samples were smokers, 8(26.6%) samples were alcoholic, 6(20%) samples were smoker cum alcoholic whereas 8 (26.6%) samples had none of these above habits. In experimental group reveals, 9(30%) samples were smoker and alcoholic, 8(26.6%) samples were smoker, 6(20%) were alcoholic whereas 7(23.3%) samples had none of these above habits. Regarding body mass index

The above Figure 4.1.4 shows that in experimental group I, 13 (43.3%) samples had normal weight, 10(33.3%) samples had overweight and 7(23.3%) samples had underweight. In experimental II group, majority of the samples 17(56.6%) samples had normal weight, 8(26.6%) samples had overweight and 5(16.6%) samples had underweight. Regarding chronic diseases in experimental group I, 19(63.3%) samples suffered from chronic diseases and 11 (36.6%) samples had no chronic diseases. Regarding size of the cannula in experimental group I, 16(53.3%) samples were inserted 18 G IV cannula, 9(30%) samples were inserted 20 G, 4(13.3%) samples were inserted 22G and 1(3.3%) sample was inserted 16 G IV cannula. Regarding frequency of medication in both the experimental groups I and II all the samples 30(100%) had continuous infusion. Regarding type of ionotropic agent in both the experimental groups I and II all the samples 30(100%) had continuous infusion. The above Figure 4.1.7 depicts that in both the experimental groups I and II all the samples 30(100%) had continuous infusion. Regarding duration of cannula in experimental group I, 16(53.33%) samples had less than 2 days of cannula in situ, 13(43.33%) samples had 2-5 days of cannula in situ and 1(3.33%) sample had 3-5 days of cannula. In experimental group II, 16(53.33%) samples had less than 2 days of cannula in situ, 13(43.33%) samples had 2-5 days of cannula in situ and 1(3.33%) sample had 3-5 days of cannula.

Table No.2 shows that comparison of mean and standard deviation of pre and post test scores among experimental group I and experimental group II. In Pre-test the mean and the standard deviation of thrombophlebitis was 12.1 ± 3.48 in the experimental group I and 12.7 ± 3.36 in the experimental group II respectively. In Post-test the mean and standard deviation of thrombophlebitis was 10.0 ± 3.25 in the experimental group I and 6.9 ± 2.56 in the experimental group II respectively. The mean difference of moist heat fomentation was 2.1 and that of ice pack application was 5.8 in experimental group I and experimental group II respectively.

Table No.3 Portraits that paired ‘t’ test value which was calculated to analyze the effectiveness of moist heat fomentation on thrombophlebitis score among experimental group I. The calculated ‘t’ value 21.8 was greater than the table value $t=2.07$ at $p\leq 0.05$. It shows that moist heat fomentation was effective on reducing the thrombophlebitis score among the patients receiving ionotropic infusion. Hence, the hypothesis H_1 is retained.

Table No.4 Portraits that paired ‘t’ test value which was calculated to analyze the effectiveness of ice pack application on thrombophlebitis score among experimental II group. The calculated ‘t’ value 15.9 was greater than the table value $t= 2.12$ at $p\leq 0.05$. It shows that ice pack application was effective on reducing the thrombophlebitis score among the patients receiving ionotropic infusion. Hence, the hypothesis H_2 is retained.

Table No.5 Depicts that the calculated unpaired ‘t’ test value 4.2 was greater than the table value 2.78 at $p\leq 0.01$. It shows that ice pack application was more

effective than moist heat fomentation in reducing thrombophlebitis among the patients receiving the ionotropic infusion. Hence, the hypothesis H_3 is retained.

Table No.6 shows that in the experimental group I, with regard to pre test level thrombophlebitis there was no significant association found between age, gender, habits, body mass index, history of chronic diseases, size of the cannula, frequency of medication, type of ionotropic agent administration and duration of cannula. Hence, the hypothesis H_4 was rejected for all the demographic variables. In the experimental group II, with regard to pre-test level thrombophlebitis there was a significant association found between age and size of the cannula. Hence, the hypothesis H_4 was accepted for the above mentioned variables and rejected for gender, habits, body mass index, history of chronic diseases, frequency of medication, type of ionotropic agent administration and duration of cannula.

Table No.1: Distribution of patients with thrombophlebitis according to their demographic variables in experimental group I and experimental group II

S.No	Demographic Variables	Experimental Group I		Experimental Group II	
		Frequency N=30	Percentage (%)	Frequency N=30	Percentage (%)
Age					
1	21- 30years	1	3.3	3	10
2	31-40years	5	16.6	7	23.3
3	41-50years	14	46.6	12	40
4	51 – 60years	10	33.3	8	26.6
Gender					
5	Male	22	73.3	24	80
6	Female	8	26.6	6	20
Habits					
7	Cigarette smoking	8	26.6	8	26.6
8	Alcohol	8	26.6	6	20
9	Cigarette smoking	6	20	9	30
10	None	8	26.6	7	23.3
Body Index Mass					
11	Underweight	7	23.3	5	16.6
12	Normal	13	43.3	7	56.6
13	Overweight	10	33.3	18	26.6
History of chronic Diseases					
14	Yes	19	63.3	18	60

15	No	11	36.6	12	40
Size of the cannula					
16	16G	1	3.3	3	10
17	18G	16	53.3	17	56.6
18	20G	9	30	5	16.6
19	22G	4	13.3	5	16.6
Frequency of Medication					
20	Once	0	0	0	0
21	Twice	0	0	0	0
22	Three Times a day	0	0	0	0
23	Continous Infusion	30	100	30	100
Types of ionotropic Agent					
24	Positive	30	100	30	100
25	Negative	0	0	0	0
Duration of cannula in situ					
26	< 2days	16	53.3	16	53.3
27	2-5days	13	43.3	13	43.3
28	3-5 days	1	3.3	1	3.3

Table No.2: Mean, Standard deviation and Mean difference in pre-test and post-test among samples in experimental group I and experimental group II N=30

S.No	Group			Pre-test		Post-test		Mean difference
				Mean	SD	Mean	SD	
1	Thrombophlebitis Score	Experimental group I	MHF	12.1	3.48	10.0	3.25	2.1
		Experimental group II	IPA	12.7	3.36	6.9	2.56	5.8

Table No.3: Paired ‘t’ test value of pre and post-test thrombophlebitis scores among experimental group I

S.No	Experimental group I	Mean	SD	Paired ‘t’ value	df	
1	Moist heat fomentation	Pre-test	12.1	3.48	**21.8	29
		Post-test	10.0	3.25		

Table value=2.07 **highly significant at $p \leq 0.05$

Table No.4: Paired ‘t’ test value of pre and post-test thrombophlebitis scores among experimental group II

S.No	Experimental group II	Mean	SD	Paired ‘t’ value	df	
1	Ice pack application	Pre-test	12.7	3.36	**15.9	29
		Post-test	6.9	2.56		

Table value=2.12 **highly significant at $p \leq 0.05$

Table No.5: Unpaired ‘t’ test value of post-test thrombophlebitis scores of experimental group I and experimental group II n=60

S.No	Thrombophlebitis	Groups	Mean	SD	Unpaired ‘t’ test	df
1	Moist heat fomentation	Experimental group I	10.0	3.25	4.2	58
2	Ice pack application	Experimental group II	6.9	2.56		

Table value=2.78* Significant $p \leq 0.01$

Table No.6: Association between the pre-test level of thrombophlebitis and their selected demographic variables in the experimental group I and experimental group II n=60

S.No	Demographic variables	Experimental group I n=30			Experimental group II n=30		
		Chi square	Degree of freedom	Table value	Chi square	Degree of freedom	Table value
1	Age	11	6	12.59	14.7*	6	12.59
2	Gender	4.72	2	5.99	0.4	2	5.99
3	Habits	4.45	6	12.59	6.37	6	12.59
4	Body mass index	7.02	4	9.49	3.50	4	9.49
5	History of chronic disease	0.82	2	5.99	2.2	2	5.99
6	Size of the cannula	6.6	6	12.59	13.7*	6	12.59
7	Frequency of medication	0.02	6	12.59	0.02	6	12.59
8	Type of ionotropic agent Administration	0.01	2	5.99	0.01	2	5.99
9	Duration of cannula in situ	0.54	4	9.49	7.31	4	9.49

*Significant

CONCLUSION

The study was done to evaluate the effectiveness of moist heat fomentation and ice pack application on thrombophlebitis among patients receiving ionotropic infusion at selected hospital, Coimbatore. The statistical analysis of the study showed that there was reduction in the thrombophlebitis score after implementation of moist heat fomentation and ice pack application in patients with thrombophlebitis when compared with the pre-test. Also there was a difference in the post-test thrombophlebitis score among experimental groups I and II. Thus this study proved the effectiveness of moist heat fomentation over ice pack application on thrombophlebitis score among patients receiving ionotropic infusion.

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CONFLICT OF INTEREST

We declare that we have no conflict of interest.

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