



EFFECTIVENESS OF COLD APPLICATION ON CATHETER SITE LEVEL OF PAIN AMONG POST CORONARY ANGIOPLASTY PATIENT ADMITTED AT DR.V.V.P.P.R.H. LONI

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ABSTRACT

Application of Cold application on the catheter site is a simple and inexpensive therapy which has been accepted for decades as an effective nonpharmacologic intervention for pain management. It increases the pain threshold, decreases the inflammatory reaction and spasm. Cold is commonly used in the treatment of acute soft tissue injuries and has been shown to reduce pain effectively in the post-operative period after procedures. However, the evidence base to support the common practice of superficial cold is limited and there is a need for higher-quality randomized controlled trials. The purpose of this review is to explore the literature regarding the physiologic effects of cold, the effectiveness of cold, different modalities used for cold application, and the potential complications associated with the use of cold application.

Key Words: Effectiveness, Cold Application, Level Of Pain, Post Coronary Angioplasty

INTRODUCTION

Although several arterial access routes may be employed during percutaneous coronary angioplasty, the femoral arterial site has been the most commonly used. However, during femoral artery interventions, many patients experience pain and discomfort during the removal of catheters previously inserted into the femoral region. Previous literature also provides evidence that both vasovagal responses and local vascular complications may develop when the pain induced by catheter removal is not effectively controlled therefore, it is important to reduce the pain experienced by patients undergoing this procedure.

Pain caused by the removal of a femoral catheter may be controlled by using pharmacological methods such as treatment with morphine sulphate or lidocaine infiltration. However, it has also been observed that such approaches may cause complications such as increased bleeding, laceration of catheters, infection, and temporary nerve injury. Pain may also be controlled using nonpharmacological methods, which are patient-specific and aim to establish empathic communication with healthcare staff. Nonpharmacological methods used for pain control provided positive effects such as reduced anxiety and psychological support; notably, patients have expressed satisfaction with such nonpharmacological methods.

Cold application is a nonpharmacological method of pain control. Being one of the oldest and easiest forms of treatment, cold application increases the threshold of pain and reduces the conduction velocity of nerve fibers transmitting pain stimuli from the peripheral to the central nervous system. Demir and Khorshid investigated the effect of cold application upon pain caused by the removal of a chest tube and revealed that cold application reduced pain.¹

This study was designed to determine the effect of the application of cold on pain after the withdrawal of the femoral arterial catheter in patients undergoing coronary angioplasty.

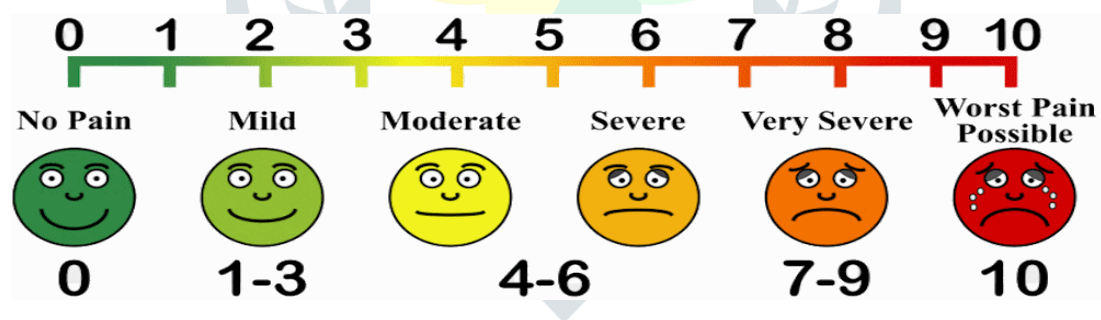
Interpretation of Level of Pain

0 - No Pain

1-3 - Mild Pain

4-7 - Moderate Pain

>7 - Severe Pain



FACIAL PAIN SCALE

METHODS:

Design

A quasi experimental study with two group pre-test post- test design

Sample and Setting

This interventional clinical study was conducted at Dr. Vitthalrao Vikhe Patil Pravara Rural Hospital, Loni Bk. The sample size for the present study was 60 post angioplasty patient (30 for control group and + 30 for experimental group).

Inclusion criteria: All post operated coronary angioplasty patients who are:

- The Patient admitted in Cardiology Unit Dr.V.V.P. P.R.H. LONI.
- Willing to provide written consent.
- available during study period.
- above 30years of age.

Exclusion criteria: All post operated coronary angioplasty patients who are:

- Critically ill.
- Advanced stage of cardiac intervention treatment.
- Patient who already having complication.

Stistical Analysis

Pain reduction was analyzed by the Paired t Test and Chi-square Test ($p < 0.05$ and 95% confidence interval) using SPSS 16 for windows.

Ethical Approval

This study was approved by the health research ethics committee of Pravara Institute of Medical Sciences Registration No. PIMS/SSEVPCON/R/IEC/PG/7/2023

Result

All 60 patients following the study. The respondent characteristic of this research shows in the table 1. It is divided into seven groups age, gender, religion, education, occupation, family income per month, BMI.

Table 1. characteristics of respondents (n=60)

SR.NO	DEMOGRAPHIC VARIABLE	GROUP			
		CONTROL GROUP (n=30)		EXPERIMENTAL GROUP (n=30)	
		f	%	f	%
1	Age in year				
	30 to 45	9	29.97	9	29.97
	46 to 60	12	39.96	11	36.63
	61 and Over	9	29.97	10	33.3
2	Gender				
	Male	16	53.28	18	59.94
	Female	14	46.62	12	39.96
3	Religion				
	Hindu	15	49.95	3	9.99
	Muslim	9	29.97	12	39.96
	Christian	5	16.65	10	33.3
	Other	1	3.33	5	16.65

4	Educational Qualification				
	Uneducated	7	23.31	5	16.65
	Primary	3	9.99	7	23.31
	Secondary	5	16.65	4	13.32
	Higher secondary	7	23.31	3	9.99
	Graduate	8	26.64	11	36.63
5	Occupation				
	Unemployed	8	26.64	8	26.64
	Self	4	13.32	4	13.32
	Labor	5	16.65	6	19.98
	Office worker	9	29.97	10	33.3
	Gov and private sector	4	13.32	2	6.66
6	Family income per month				
	Rs 2001-5000	4	13.32	6	19.98
	Rs 5001-10,000	16	53.28	16	53.28
	Rs 10,000 and above	10	33.3	8	26.64
7	BMI				
	18.5-24.9	6	19.98	3	9.99
	25-29.9	20	66.6	16	53.28
	30 And Over	4	13.32	11	36.63

Table 1 shows distribution of age majority in a control group age are 40 to 60 year¹² (39.96%) and minor are age group is a 30 to 45 year⁹ (29.97%) ,61 and over. in a experimental group where 46 to 60 year age group are dominate sample¹¹(36.63%) and minor age 30 to 45 year⁹(29.97%).

As per the gender male majority in a control group 16 (53.28%) and less major are female 14(46.62%) as such in a experimental group where male are dominate sample 18(59.94%) and the female 12(39.96%).

Religion in a control group the Hindu are the majority in a sample 15 (49.95 %) and the in a experimental group the Muslim sample we get¹² (39.96%).no any segmenting different in a this both group.

As per the educational qualification graduate sample in more number in control group of study 8(26.64%).In Experimental group sample be the same in a graduated type of education completed people in majority in number¹¹(36.63%) there are in descending manor in uneducated, primary, secondary education.

As per occupation, office staff in a more in experimental group 9(29.97%)and control group the office staff are to be the more indicated in the study major angioplasty 10(33.3%) as compared to the unemployed ,self-employed and Laboure.

According to the study family income per month is average is 5000 to 10000 in between we got more 16

(53.28%) sample in a study classical less are to more than 10,000 in come per month.

According to the body mass index we are the interpreting the data on more patient seen in a overweight. BMI range is about 25(29.9%) ,overweight20 (66.6%) sample are a in control group and 16(53.29) in experimental group.

Table 2. **Characteristic related to the angioplasty (n=60)**

SR. NO.	DEMOGRAPHIC VARIABLE	GROUP				
		CONTROL GROUP (n=30)		EXPERIMENTAL (n=30)		
		f	%	f	%	
I. Characteristic related to the angioplasty:						
1	Femoral sheath	16f	21	69.93	25	83.25
		7f	9	29.97	5	16.65
2	Hematoma	Present	2	6.66	21	69.93
		Absent	28	93.24	9	29.97
3	Duration of catheter has intact femoral region	0-240 min	21	69.93	21	69.93
		240min and above	9	29.97	9	29.97
4	Heparin dose during angioplasty	Below 100IU/kg of body weight	11	36.63	1	3.33
		100 IU/kg of body weight	13	43.29	18	59.94
		Above 100IU/kg of body weight	6	19.98	11	36.63
5	vasovagal response occur	No	26	86.58	20	66.6
		Yes	4	13.32	10	33.3
6	Hematoma and Oozing seen femoral catheter	No	21	69.93	23	76.59
		Yes	9	29.97	7	23.31
7	Pain in femoral area	Mild	6	19.98	8	26.64
		Moderate	8	26.64	9	29.97
		Severe	16	53.28	14	46.62

As table no 2 shows the clinical character related to the angioplasty and in that case majority of 6Fr femoral sheath used In control group(69.93%) and experimental group(83.25%).as compare to 7Fr. Femoral sheath . The hematoma in invasive site majority present in experimental group(69.93%) and absence of hematoma in control group(93.24%). In control group(6.66%) hematoma may had a pain in minor sample . Duration of catheter , intact in femoral area had a more time that 0-240 min both in control as well in

experimental group (69.93%). Mostly, dose of Injection heparin used in a study is 100IU/kg/body weight of patient in both group, control(43.29%) as well as experimental group(59.94%). In a vasovagal response, due to Vegas nerve stimulation indirectly clinical parameters were affected like heart rate and blood pressure; as mentioned in above table, the response in control group(88.56%) and experimental group(66.6%) in majority level. cardiac catheterize laboratory, Pain at femoral site had mild pain with 19.98%, 26.64% were moderate pain, had majority 53.26% severe pain in experimental group. Further in control group 26.64% were mild, 29.97% moderate, 46.62% severe pain.

Table 3 Characteristic related to the angioplasty Numbness, haemorrhage, colour change, hematoma and pain occurring in patients.

SR.N O.	DEMOGRAPHIC VARIABLE	GROUP				
		CONTROL GROUP (n=30)		EXPERIMENTAL (n=30)		
II. Numbness, haemorrhage, colour change, hematoma and pain occurring in patients						
			f	%	f	%
1	Numbness	At 60 th Min	25	83.25	24	79.92
		At 4 th hour	5	16.65	6	19.98
2	Hemorrhage	At 15 th Min	26	86.58	28	93.24
		At 30 th min	1	3.33	1	3.33
		At 45 th min	3	9.99	1	3.33
3	Colour change at puncture site	YES	21	69.93	8	26.64
		NO	9	29.97	22	73.26
4	Hematoma	YES	10	33.3	8	26.64
		NO	20	66.6	22	73.26

As table no 3 shows the clinical character related to the angioplasty Numbness, hemorrhage, color change, occurring numbness in patients and in that majority of numbness In control group(83.25%) also in experimental group(79.92%).

The hemorrhage from the puncture site, majority present in experimental group (93.24%) and mainly the absence of hematoma in control group(86.58%). Less pain in a control group(3.33%) due to hemorrhage.

Colour change is more in control group (66.93%) & no any colour change in experimental group (73.26%)

The hematoma from minimal invasive site mostly present in experimental group(73.26%) and the absence of hematoma majority in control group(66.6%). Minor sample size had pain in a control group(63.3%) of site of hematoma.

Table 4 Effectiveness of cold application on the catheter site level of pain among post coronary angioplasty patient.

SR.NO.	POST TEST LEAVEL OF PAIN	Mean	SD	't' calculated	't' tabulated	'p' value
1	Control group	5.10	2.10	3.21248	1.699	0.00108
2	Experimental group	3.83	1.19			

Table no 4 shows the level of pain scores comparison of mean, SD. It reveals that mean of posttest level of pain in experimental group 3.83 ± 1.19 is less than that of mean posttest level of pain in control group 5.10 ± 2.10 . This indicates that the level of pain has a more in control group the cold application has effective intervention has to be the decrees the level of pain in experimental group. Further 't' value is calculated to check that whether the difference between level of pain scores of catheter site in post angioplasty patient was significant. Tabulated 't' value was 1.699 at 0.05 level of significance and degree of freedom 29. It is evidenced from table no 4.4 that calculated 't' value 3.212 is greater than the tabulated 't' value at a level of significance 0.05. Therefore, it proves statistically that the effectiveness of cold application on the catheter site level of pain among post coronary angioplasty patient.

Table 5 Association between selected demographic variable posttest level of pain among post coronary angioplasty patient

SR.NO	DEMOGRAPHIC VARIABLE	Calculated value	Table value	p value	Interpretation
1	Age in year	2.88	9.48	0.57	NS
2	Gender	2.81	5.99	0.24	NS
3	Religion	4.49	12.59	0.6	NS
4	Educational Qualification	3.19	15.5	0.92	NS
5	Occupation	5.43	15.5	0.71	NS
6	Family income per month	3.08	9.48	0.54	NS
7	BMI	0.91	9.48	0.97	NS

8	Medical History	9.94	12.59	0.12	NS
9	Other Addiction/ habits	6.32	12.59	0.38	NS
10	Medication Drug use status	15.11	9.48	0.004	Significant
11	Past history of angioplasty	0.37	5.99	0.82	NS
12	Thrombolysis status	1.2	5.99	0.54	NS

Table 5 shows that there was no significant association of demographic variable with pain scores of the study participants with selected demographic variables except medication drug use status. Calculated chi-value for age 2.88 is less than table value 9.48 shows non-significant association. Then calculated chi value for gender 2.81 is less than the table value 5.99 shows non-significant association. Calculated chi-value for religion 4.49 is less than table value 12.59 shows non-significant association. Calculated chi-value for educational qualification 3.19 is less than table value 15.5 shows non-significant association. Calculated chi-value for occupation 5.43 is less than table value 15.5 shows non-significant association. Calculated chi-value for family income per month 3.08 is less than table value 9.48 shows non-significant association. Calculated chi-value for body mass index 0.91 is less than table value 9.48 shows non-significant association. Calculated chi-value for medical history 9.94 is less than table value 12.59 shows non-significant association. Calculated chi-value for other addiction habit 6.32 is less than table value 12.59 shows non-significant association. Calculated chi-value for past history of angioplasty 0.37 is less than table value 5.99 shows non-significant association. Calculated chi-value for thrombolysis status 1.2 is less than table value 5.99 shows non-significant association. Calculated chi-value for medication drug use status 2.88 is less than table value 9.48 shows non-significant association.

CONCLUSION

The initiation effectiveness of cold application on catheter site level of pain among post coronary angioplasty patient. The effectiveness of cold application on catheter site level of pain among post coronary angioplasty patient is effective application.

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