A Study to Assess the Effectiveness of Aloevera Gel Application on Pain and Inflammation Among Thrombophlebitis Patients Received Intravenous Therapy in Government Doon Medical College & Hospital, Dehradun, Uttarakhand

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***Abstract*—Introduction Health is a dynamic process and it is always changing. All have times of good health, times of sickness, and may be even times of serious illness. An alteration of the normal state of a human being that varies the vital functions can be determined as a disease. In todays' era 90% hospitalized patient get intravenous canulization. The most common complication of IV infusion is thrombophlebitis and its incidence rate is 3.7% to 67.24%. It is characterized by a redden, warm area around the insertion site of along the path of a vein, pain or tenderness at the site of vein and swelling. Objective: to assess the effectiveness of Aloevera gel application on thrombophlebitis among patient received intravenous canulization.**

Method: quasi experimental pre-test and post-test control group design was used. 60 individuals with thrombophlebitis were recruited by non-probability convenience sampling technique into two groups and pre assessment was done. Experimental group received Aloevera gel application over the site of thrombophlebitis for 15 minutes twice a day for 5 days. Post test was done with the modified Visual Infusion Phlebitis Scale on the sixth day for both groups.

Results: Statistical findings revealed that the post-test mean score of thrombophlebitis in experimental group was 1.90±0.61 whereas the post-test mean score of thrombophlebitis in control group was 3.1±0.66. The mean difference was 1.2 and the calculated unpaired "t" value 6.871 which was found to be statistically significant at P ≤ 0.05 level. The pre-test mean score of thrombophlebitis in experimental group was 3.53±0.63 and the post-test mean score was 1.90±0.61. The mean difference was 1.63 and the calculated paired "t" value 6.13 which was found to be statistically significant at P ≤ 0.05 level.

Conclusion: The use of Aloevera gel application is found effective in reduction of thrombophlebitis among patient received intravenous therapy.

***Index Terms*—Assess, Intravenous Infusion, Thrombophlebitis, Aloevera Gel**

I. INTRODUCTION

Health is a dynamic process and it is always changing. An alteration of the normal state of a human being that varies the vital functions can be determined as a disease. Medical treatment can be explained as the therapies that includes administration of medications or procedures, specifically supervised by a physician. In today's era, medical practice comes with intravenous therapy of hospitalized patients.

Intravenous therapy is the administration of substance directly into a client's vein. It is preferred to administer fluid, nutrients and medications. The most common complication of IV infusion is thrombophlebitis and its incidence rate is 3.7% to 67.24%. Thrombophlebitis is defined as inflammation of a vein related to a chemical or mechanical or bacterial irritation, or both. It is further defined as inflammation of vein related to a chemical, mechanical or bacterial irritation, or both. It is characterized by a redden, warm area around the insertion site of along the path of a vein, pain or tenderness at the site of vein and swelling. The incidence of thrombophlebitis increases with the length of time, the composition of the fluid or

medication infused, the size and site of the cannula inserted, improper anchoring and the introduction of microorganism.

Australlian Journal of Advanced Nursing (2015) said that occurence of thrombophlebitis was 37.09 % at globally. In India, the incidence rate is 31.5% whereas in Dehradun, a study was done to know the incidence rate which was about 51%.

Aloe vera is a natural antimicrobial, antiviral, antibacterial, and antifungal. It was reported by previous studies that that use of aloe vera has goof effect in treating the wounds caused by psoriasis, mouth ulcers, diabetic ulcers herpes and bed sores. Aloe vera is an amazing mixture of more than 200 constituents, which helps to reduce inflammation, speed the healing of wounds, ameliorate pain, improve vascular flow, and reduce scarring. It consists of anti-inflammatory agent gibberlin and polysacharrides which effectively decrease inflammation and promote healing. It contains salicylic acid and ligin which penetrate deeply into the skin that show therapeutic effects, relieves pain. And the muco-polysaccharides along with amino acids and zinc in aloe vera helps in maintaining skin integrity, retain its moisture, reduce erythema and help inflammation.

Pranita Gurung (2022), conducted a study to evaluate the effectiveness of Aloevera gel application among patients with IV phlebitis where she concluded that Aloe Vera gel was effective in the treatment of intravenous phlebitis among patients receiving intravenous therapy and can be recommended for use in grade I and II phlebitis.

II. MATERIALS AND METHODS

Quantitative approach with quasi experimental pre-test and post-test control group design was used in the study. A convenient sampling technique was used to collect data from 60 individuals with thrombophlebitis, based on inclusion criteria 30 samples were in experimental group and 30 samples in control group were recruited. The study was conducted in Government Doon Medical College Hospital, Dehradun, Uttarakhand. The pre-test was done on the very first day to assess the level of thrombophlebitis by modified visual infusion phlebitis scale. In the experimental group, patients were received Aloevera gel application over the site of thrombophlebitis for 15 minutes twice a day (morning and evening) for 5 days. Post test was done with the modified Visual Infusion Phlebitis Scale on the sixth day for both group by same scale. The duration of the study was 1 month.

III. INSTRUMENT/ TOOL

It consists of three sections:

Section I: Comprise of questions to elicit demographic data.

Section II: Comprise of questions to elicit clinical data.

Section III: Modified Visual Infusion Phlebitis scale. It consists of 6 components pain, swelling, erythema, induration, palpable venous cord and pyrexia.

The content validity of the tool were subjected to 9 experts from the field of medical and surgical department. The pilot study was conducted among 10 thrombophlebitis patients to ensure the feasibility and reliability of the tool at coronation hospital, Dalanwala, Dehradun in from 1/05/2024 to 08/05/2024.

IV. STATISTICAL ANALYSIS

Data analysis was based on the objectives and used descriptive and inferential statistics to analyse the data.

Descriptive Statistics

- Frequency and percentage distribution were used to analyse the demographic variables and level of thrombophlebitis among hospitalized patients.
- Mean and standard deviation were used to describe the thrombophlebitis.

Inferential Statistics

- Unpaired t-test was used to compare the post-test level of pain and inflammation between experimental group and control group.
- Chi square test was used to find the association of post-test scores with their selected demographic variables.

V. ETHICAL CONSIDERATION

- The study had been performed after getting approval from the ethical of committee of State College of Nursing, Dehradun.
- Permission obtained from the chairman of Government Doon Medical College hospital, Dehradun.

- The written consent was obtained from each study participant before collection the data.
- Confidentiality was maintained throughout the study.

VI. RESULTS

Table 1: Findings and percentage distribution of subjects by pre-test and post-test level of thrombophlebitis among patients received intravenous therapy in experimental group and control group N=60(30+30)

Level of thrombophlebitis	experimental group				Control group			
	Pre test		Post test		Pre test		Post test	
	f	%	f	%	f	%	f	%
None	-	-	6	20	-	-	-	-
Possible first sign	2	6.67	19	63.33	2	6.67	5	16.6
Early stage of thrombophlebitis	10	33.33	5	16.67	12	40	17	56.7
Mild	18	60	-	-	16	53.33	8	26.7

Table 2: Comparison of pre and post-test mean score of thrombophlebitis among patients received intravenous therapy in experimental and control group.N=30+30

Assessment	Group	Mean	SD	Mean difference	Paired 't' value	Df	t value tab.	P value
Experimental Group	Pre-test	3.53	0.63	1.63	6.13	29	2.045	0.0001 (significant)*
	Post-test	1.90	0.61					
Control Group	Pre-test	3.4	0.62	0.3	4.097	29	2.045	0.0003 (significant)*
	Post-test	3.1	0.66					

Significant at level of $p<0.05$

Table 2 shows that the pre-test mean score of thrombophlebitis in experimental group was 3.53±0.63 and the post-test mean score was 1.90±0.61. The mean difference was 1.63 and the calculated paired "t" value 6.13 which was found to be statistically significant at $P \leq 0.05$ level.

The pre-test mean score of thrombophlebitis in control group was 3.4±0.62 and the post-test mean score was 3.1±0.66. The mean difference was 0.3 and the calculated paired "t" value 4.097 which was found to be statistically significant at $P \leq 0.05$ level.

Table 3: Comparison of post-test mean score of thrombophlebitis among patients received intravenous therapy between the experimental and control group.

Group	Mean	SD	Mean diff.	Unpaired 't' value (cal)	df	't' value (tab)	p-value
Exp group	1.90	0.61	1.2	6.871	58	2.00	0.0003 S*
Control group	3.1	0.66					

Significant at level of $p<0.05$

Table 3 shows that the post-test mean score of thrombophlebitis in experimental group was 1.90±0.61 whereas the post-test mean score of thrombophlebitis in control group was 3.1±0.66. The mean difference was 1.2 and the calculated unpaired "t" value 6.871 which was found to be statistically significant at $P \leq 0.05$ level.

VII. DISCUSSION

The pre-test mean score of thrombophlebitis in experimental group was 3.53±0.63 and the post-test mean score was 1.90±0.61. The mean difference was 1.63 and the calculated paired "t" value 6.13 which was found to be statistically significant at $P \leq 0.05$ level. The pre-test mean score of thrombophlebitis in control group was 3.4±0.62 and the post-test mean score was 3.1±0.66. The mean difference was 0.3 and the calculated paired "t" value 4.097 which was found to be statistically significant at $P \leq 0.05$ level. The post-test mean score of thrombophlebitis in experimental group was 1.90±0.61 whereas the post-test mean score of thrombophlebitis in control group was 3.1±0.66. The mean difference was 1.2 and the calculated unpaired "t" value 6.871 which was found to be statistically significant at $P \leq 0.05$ level. The findings is supported by this study Rangalakshmi (2018), in her study the post-test mean score of thrombophlebitis in experimental group was 6.4±1.2 whereas in the control group it was 8.6±1.2. The mean difference was 2.2 and the calculated unpaired "t" value is 6.79 was found to be statistically significant at $P \leq 0.05$ level.

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