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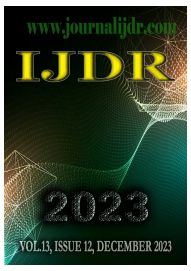

RESEARCH ARTICLE OPEN ACCESS

AN EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF MAXEL DRESSING VERSUS PHLEBOTROYIN REDUCTION OF INFLAMMATION AMONG PATIENTS WITH THROMBOPHLEBITIS IN SELECTED HOSPITALS JALANDHAR, PUNJAB

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ABSTRACT

Thrombophlebitis, a condition characterized by inflammation of veins coupled with the formation of blood clots, poses a significant challenge in the realm of healthcare. This experimental study delves into the effectiveness of two prominent treatment modalities - Maxel dressing and Phlebotroy - in reducing inflammation among patients with thrombophlebitis. The study was done utilizing a quantitative research approach that includes a pre-test post-test. The non-probability purposive selection strategy was utilized to pick a total of 60 subjects from designated hospitals in Jalandhar, Punjab; 30 patients were given a Maxel dressing and 30 patients were given a Phlebotroy. The patients who were chosen for the study were evaluated for thrombophlebitis using the Modified Visual Infusion Phlebitis Score. Following this, they were treated with Maxel dressing and phlebotroy for two days in a row, twice daily. The efficacy was evaluated on the third day using the Modified Visual Infusion Phlebitis Score. Results depicts that thrombophlebitis patients who undergo phlebotroy and utilise maxel dressings have less inflammation. When it came to reducing inflammation in thrombophlebitis patients, the research found that maxel dressing and phlebotroy were equally efficient; moreover, there was no statistically significant difference between the two.

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INTRODUCTION

As an important part of their medical care, millions of people are brought to hospitals every year that need some kind of venous access. Intravenous catheterization is a widely used operation for the delivery of fluids, intravenous medicines, blood products, and blood sample. A wide range of catheters are used in clinical settings, however the peripheral intravenous catheters are the most often utilized due to their ability to quickly access the circulatory system, as well as their minimal invasiveness and simplicity. Nearly 80% of the hospitalized patients require intravenous (IV) access during their hospitalization. The excessive use of catheters exposes patients to many problems, including extravasation, ecchymosis, hematoma, infection, and thrombophlebitis. Thrombophlebitis is the most severe and prevalent consequence linked to IV catheterization of all these complications. Thrombophlebitis refers to the occurrence of inflammation in a vein due to the presence of a blood clot. Phlebitis refers to the inflammation of a vein, whereas thrombi are blood clots that may cause discomfort, irritation, and perhaps obstruct blood flow inside the veins.

Thrombus development arises from acute inflammation triggered by several stimuli, including the usage of an infusion pump, the flow rate, osmolality, and pH of the infused fluid, as well as the material of the cannula. Superficial thrombophlebitis (ST), often referred to as superficial venous thrombosis, is a medical disorder characterized by the presence of a blood clot inside the lumen of a superficial vein, accompanied by an inflammatory response in the vessel wall and surrounding tissues. The condition manifests as a tangible cord that is firm, congested, warm, and painful, and it aligns with the trajectory of a superficial vein. The illness is prevalent, however its precise occurrence rate is uncertain. Its prevalence is believed to surpass that of deep venous thrombosis (DVT). The clinical diagnosis is very precise, but, the use of vascular ultrasonography may further enhance accuracy and provide a visual representation of the thrombotic process's magnitude. The intensity of the inflammatory process can vary and impact blood vessels of different sizes, ranging from small tributaries to large sections of the saphenous trunks. In more severe cases, it can also affect the deep vein system, leading to serious complications such as deep vein thrombosis (DVT) and pulmonary embolism (PE). Approximately 21.6% to 36% of cases of superficial thrombophlebitis are accompanied by DVT.

Superficial thrombophlebitis has been shown to coexist with pulmonary embolism in studies that have systematically screened individuals, regardless of whether they had symptoms or not. Phlebitis is often characterized by pain, tenderness, erythema (redness), and distention of the vein. The erythema and sensitivity may trace the path of the vein subcutaneously. Symptoms such as a high temperature or the discharge of pus from the area affected by thrombophlebitis may indicate an infection at the location, known as septic thrombophlebitis. The presence of a palpable venous cord along the path of the vein might indicate the presence of superficial thrombophlebitis. The manifestation of a deep venous thrombosis might include erythema and edema of the affected extremity accompanied by discomfort and sensitivity. The treatment involves ceasing the administration of the Intravenous line and reinitiating it in a different location, while also administering a warm and wet compress to the afflicted area. Phlebitis may be prevented by using aseptic technique during insertion, utilizing the suitable-sized cannula or needle for the vein, taking into account the composition of fluids and drugs when choosing a site, and regularly monitoring the site for problems such as phlebitis or any indications of phlebitis. Various therapeutic approaches, including the administration of magnesium sulphate, aloe vera gel, thrombophob gel, or heparin solution, may effectively control the condition. Despite the widespread use of these treatments either alone or in combination, determining the optimal intervention remains perplexing and subject to debate for nurses in practice.

Need of the study

Peripheral intravenous access is becoming more common, although it remains difficult to establish, especially in individuals with tiny or collapsed veins. Consequently, patients often experience unsuccessful efforts and ultimately suffer from venous depletion. In addition, ensuring the preservation of a patient's vascular access throughout therapy poses challenges due to many potential consequences such as thrombophlebitis, infiltration, extravasation, and infections. Infusion thrombophlebitis is becoming a prevalent complication in individuals undergoing intravenous treatment. Proficiency in physical dexterity and technical expertise, together with a deep understanding of pharmacological treatment and a thorough knowledge of the anatomy and physiology of the vascular system, are necessary. Nevertheless, the outcomes of conventional treatment procedures, such as applying medication externally, are not sufficient. Consequently, it is essential to explore novel approaches and use them in order to avoid and relieve infusion thrombophlebitis.

The provision of nursing care is a crucial determinant of the prognosis of patients admitted to the hospital, and nurses play a pivotal role in administering Intravenous treatment. The care and management of intravenous cannulation are often guided by knowledge, experience, and regular care. Intravenous treatment is a frequently performed and undoubtedly advantageous method. However, it is important to highlight that problems associated to intravenous infusion have been seen in 50-75% of patients. Placing and removing a peripheral intravenous cannula is a prevalent hazard for all nurses. Nurses must provide daily care for a cannula after it has been implanted. Proficiency in the planning, insertion, care, and management of peripheral intravenous infusion lines is fundamental in nursing education. Since 1950, the administration of hypertonic medicines, solutions, or anticoagulants has been associated with a notably high incidence of problems. In several instances, nurses failed to properly assess, remove, or replace the cannula as required. Nurses regularly perform the insertion and maintenance of peripheral cannulas. Advancements in technology and medicine have significantly improved the safety of Intravenous treatment compared to previous methods. Nevertheless, there remains a potential for problems.

Thrombophlebitis prophylaxis is crucial in a hospital environment. Nurses have more responsibility in preventing the onset and complications associated with Thrombophlebitis. Particular emphasis should be given to this objective. Limb edema may result in immobility, discomfort, infection, as well as dread and worry associated with the illness. Thrombophlebitis may cause the skin to become dry and scaly. To mitigate skin issues, nurses should possess knowledge about various management techniques such as medicine administration, use of moisturizing creams, and the use of glycerin.

Throughout the clinical experience, the investigator saw several patients who were afflicted with thrombophlebitis, a consequence arising from Intravenous infusion treatment. Several management approaches were used for this condition, with the most widely used methods being maxel dressing and phlebotomy. Due to the scarcity of studies in the literature evaluating the effectiveness of magnesium sulphate and heparin quick penetrating solution in preventing phlebitis, the investigator decided to compare the efficacy of maxel dressing versus phlebotroy in reducing inflammation among patients with thrombophlebitis. Patients might benefit from the alleviation of problems associated with thrombophlebitis, therefore receiving high-quality therapy.

Research problem: An experimental study to assess the effectiveness of maxel dressing versus phlebotroy in reduction of inflammation among patients with thrombophlebitis in selected hospitals Jalandhar, Punjab.

Objectives

1. To assess the pre-interventional level of inflammation among patients with thrombophlebitis.
2. To assess the post-interventional level of inflammation among patients with thrombophlebitis.
3. To ascertain effectiveness of maxel dressing versus phlebotroy in reduction of inflammation by comparing pre-interventional and post-interventional scores among patients with thrombophlebitis.

REVIEW OF LITERATURE

Investigator discussed the review of literature under following headings:

1. **Section I**- Literature related to incidence and risk factors of thrombophlebitis.
2. **Section II**- Literature related to complications of intravenous therapy.
3. **Section III**- Literature related to treatment of thrombophlebitis.

MATERIAL AND METHODS

Research approach: quantitative research approach was inspected and found suitable for the study.

Study design: Pre-experimental pre-test post-test design was used.

Sample size: A total of 60 patients with thrombophlebitis after intravenous therapy, who fulfill the inclusion criteria from selected hospital were included in the study.

Sample technique: The technique to draw the sample used was Non-probability purposive sampling.

Development of tool

Part I: Socio-demographic variable performa to collect the general information of patients on like Age, Gender, Educational status, Religion, Occupational status, Family income (in rupees) Dietary pattern, Peripheral intravenous cannula size (in gauge), Site of cannula insertion, Involvement of joint, Duration of intravenous catheter, Any blood related disorders, Types of intravenous infusion, frequency of intravenous fluid (in 24 hours).

Part II: It consisted of a Modified Visual Infusion Phlebitis Score to assess the level of inflammation among patients with thrombophlebitis.

Data Collection Procedure: The collection of final data occurred subsequent to its authorization by the administration. The researcher provided a description of the study objectives to the participants, ensuring them that their data would be kept confidential and anonymous for the duration of the experiment. Subsequently, the participants provided their informed consent to participate in the study. The Modified Visual Infusion Phlebitis Score was used to evaluate the degree of inflammation in thrombophlebitis patients before the intervention. A total of 60 patients with thrombophlebitis were chosen using a non-probability purposive selection approach. Of these, 30 were allocated to get maxel dressing and 30 were assigned to receive phlebotroy. Both treatments were administered twice a day for two consecutive days. Patients with thrombophlebitis had their inflammation levels evaluated once again on the third day after the intervention using the Modified Visual Infusion Phlebitis Score.

Statistical analysis: Data was gathered and analysed using descriptive and inferential statistics.

RESULTS

According to sample characteristics equal number of samples (40%) was in the age group 21-30 years in maxel dressing and phlebotroy. Majority of samples (56.6%) were male in phlebotroy application group. Most of the samples (43.33%) were non-literate in phlebotroy. Equal number of samples (60%) was Hindu in both maxel dressing and phlebotroy and (60%) were unemployed in maxel dressing application. Most of the samples (50%) were having family income≤5000 in maxel dressing. Majority of the samples (66.67%) were vegetarian in phlebotroy application group. Moreover, the greatest number of samples (50%) inserted cannula size of 20G in maxel dressing application group and majority number of samples (33.33) was cannulated in basilic vein in the phlebotroy application group and majority of samples (70%) in the maxel dressing group did not have involvement of joint. Moreover, majority of the samples (50%) were 12 hours to 24 hours duration of intravenous catheter in maxel dressing application group and equal number of samples (100%) were did not have any underline blood related disorder in both maxel dressing and phlebotroy group. Majority of samples (66.6%) were on antibiotic infusion in phlebotroy application group and majority of samples (85.33%) were frequency of intravenous fluid two times a day in maxel dressing application group. 63.33% of samples had severe thrombophlebitis before application of maxel dressing. 70.00% of samples had severe thrombophlebitis before application of phlebotroy. Moreover, 66.66% of samples had mild thrombophlebitis after maxel dressing. 53.33% of samples had mild thrombophlebitis after phlebotroy. Table 1 depicts the comparison of mean pre- interventional and post-interventional scores among patients with thrombophlebitis in Maxel Dressing group. The findings indicate that the mean pre-interventional score was 4.93(±0.80) and mean post-interventional score was 1.20(±0.61). Further, the computed 't' value was found to be 40.49 which is statistically significant at 0.001 level. Table 2 depicts the comparison of mean pre- interventional and post-interventional scores among patients with thrombophlebitis in Phlebotroy group. The findings indicate that the mean pre-interventional score was 4.91(±0.67) and mean post-interventional score was 1.4 (±0.61). Further, the computed 't' value was found to be 33.97 which is statistically significant at 0.001 level. Furthermore, in comparison of the mean post-interventional score among patients with thrombophlebitis.

The findings indicate that the mean post-interventional score of maxel dressing was 1.2 (±0.61) and the mean post-interventional score of phlebotroy was 1.4 (±0.61). Further, the computed 't' value was found to be (1.42) which was not significant at $p<0.05$. Hence, it revealed that there was no significant difference in the mean post interventional scores of maxel dressing and phlebotroy. Whereas both maxel dressing and phlebotroy were effective at their own place in reduction of inflammation among patients with thrombophlebitis. In maxel dressing group the association of pre-interventional level of inflammation among patients with thrombophlebitis with their socio demographic variables of duration of intravenous catheter was 6.38. The calculated chi square value of duration of intravenous catheter (6.38) was more than the table value which was found to be statistically significant at $p<0.05$ level. The remaining socio demographic variables were statistically non-significant at $p<0.05$ on reduction of inflammation among patients with thrombophlebitis in maxel dressing group. There was no statistically significant association between socio demographic variables on reduction of inflammation among patients with thrombophlebitis in phlebotroy group.

Table 1: Comparison of the Pre- and Post-Interventional Scores among Patients with Thrombophlebitis (Maxel Dressing)

N = 30

Thrombophlebitis score	Mean	SD	Mean difference	df	't'
Pre interventional	4.93	±0.80	3.1	29	40.49***
Post interventional	1.20	±0.61			

Maximum score =06 *** significant at p<0.001 level Minimum score =00

Table 2: Comparison of the Pre- and Post-Interventional Scores among Patients with Thrombophlebitis (Phlebotroy)

N = 30

Thrombophlebitis score	Mean	SD	Mean difference	df	't'
Pre interventional	4.91	±0.67	3.5	29	33.97***
Post interventional	1.4	±0.61			

Maximum score =06 *** significant at p<0.001 level Minimum score =00

CONCLUSION

It was concluded from the findings of the study that there was significant reduction in the level of inflammation among patients with thrombophlebitis after application of maxel dressing and phlebotroy. Hence, the use of maxel dressing and phlebotroy in reduction of inflammation was effective. Further-more the study concluded that there was no statistically significant difference between maxel dressings versus phlebotroy, both maxel dressing and phlebotroy were effective on their own place in reduction of inflammation among patients with thrombophlebitis.

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