

Effectiveness of Magnesium Sulphate with Glycerine", For Reducing Inflammation Among Patients with Peripheral Intravenous Cannula Induced Phlebitis

P Saktisvary

Abstract

Introduction: In most of the medical and surgical interventions intravenous infusion plays very essential role. The fluids imbalances may result from many factors like injury, surgery and different kinds of medical illnesses. These imbalances can be corrected by intravenous therapy. Due to the presence of in situ intravenous catheter for long time often inflammatory reactions occur at that site leading to redness, swelling, pain and fever, that is how phlebitis manifests. Later if phlebitis not treated early this can lead to the formation of thromboembolism. **Method:** In this study quasi-experimental research approach was used. Non probability purposive sampling technique was used to select the sample from the selected hospital. The research design adopted for the study was pre-test, post-test control group design. In the present study a sample of 60 hospitalized patients and who met the inclusion criteria was selected from the target population. In this study the instruments used are baseline Performa, structured interview schedule to assess the subjective symptoms and observation scale to observe the objective symptoms. **Result:** In experimental group post test mean score 1.10, Standard deviation was 0.71 respectively. In control group post test mean score 2.53, Standard deviation was 0.78 respectively. The obtained value 7.454 statistically was significant at 0.001 levels. So research hypothesis was accepted. So there was significant difference between post intervention phlebitis among the experimental group and control group. **Discussion:** In the research study findings revealed that Magnesium sulphate with Glycerin dressing is highly effective in decrease phlebitis level to the patients.

Keywords: Magnesium sulphate with Glycerin dressing; Peripheral Intravenous infusion induced Phlebitis; Effectiveness.

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Introduction

In modern medical practice most of the hospitalized patients receive intravenous therapy. Among those some goes for phlebitis that is caused by the inflammation of tunica intima of a superficial vein due to irritation of the tunica by mechanical, chemical or bacterial sources. It is estimated that in U.K 80% of patients with peripheral venous cannula develop phlebitis and to determine the incidence of peripheral intravenous therapy-related phlebitis in an adult population, results showed that phlebitis rate was 3.3% (10/305).

Administering drugs or fluids being infused through cannula. Factors such as pH and osmolarity of substances have a significant effect on the incidence of phlebitis. If left untreated, it can lead to infection or thrombus formation. Hence it is essential for the nurses to manage the patients with phlebitis which can promptly be prevented. Chemical phlebitis can be caused by an irrigating medication or solution (increased pH or high osmolarity of a solution), rapid infusion rates. Mechanical phlebitis results from long periods of cannulation, catheter in flexed areas, catheter gauges larger than the vein lumen, and poorly secured catheters. Bacterial phlebitis can occur if proper aseptic techniques are not carried out inserting intravenous catheter.

Other factor is poor venipuncture technique phlebitis is characterized by reddened warm area around the insertion site or along the path of the vein, pain or tenderness at the site or along the swelling. Treatment consists of discontinuing the

Author Affiliation: Assistant Professor, Department of Medical-Surgical Nursing, Con, Mtpg and Rihs, Indra Nagar, Puducherry.

Corresponding Author: P Saktisvary, Assistant Professor, Department of Medical-Surgical Nursing, Con, Mtpg and Rihs, Indra Nagar, Puducherry.

E-mail: saktiakshara@gmail.com

IV line and restarting it in another site and applying a warm, moist compress to the affected site. Measures taken to prevent phlebitis are aseptic technique during insertion should be taken care, using the appropriate-size cannula or needle for the vein, considering the composition of the fluids and medications when selecting a site and observing the site hourly for complications like phlebitis, infection, infiltration, overload, hypothermia and embolism.

Magnesium sulfate is a colorless, odorless and a solid substance. It is slightly bitter in taste. It is highly soluble in inorganic solvents like water. It is partially soluble in organic solvents, like glycerin and alcohol. Magnesium sulfate in its anhydrous form is hygroscopic. It has a tendency to attract moisture.

Objectives:

1. To assess the pretest intervention phlebitis in experimental group.
2. To assess the pretest intervention phlebitis in control group.
3. To assess the post intervention phlebitis in experimental group.
4. To assess the post intervention phlebitis in control group.
5. Determine the effectiveness of magnesium sulphate with glycerin dressing on phlebitis among patient.

Materials and Methods

Type of the study: Experimental study

Ethical clearance was obtained from ethical committee and informed consent was taken from the participants. Duration of the study is 2 years. Sampling technique: Non probability convenient sampling technique was used in this study. In this study 60 patients was selected 30 for experimental group and 30 for control group.

Inclusion criteria:

Patients with peripheral intravenous cannula induced phlebitis who were:

- available during the period of data collection.
- willing to participate in the study.
- Conscious

Exclusion criteria:

Patients with phlebitis who were:

- having skin disorder, poor skin condition, and abscess seen at the puncture site.
- with open wound.
- not willing to participate in the study.

Methodology:

In this study quasi-experimental research approach was used. The research design adopted for the study was pre-test, post-test control group design.

Grouping: There were two groups experimental and control group.

In this study the instruments used are baseline Performa, to assess the subjective symptoms and observation scale to observe the objective symptoms. Jackson's visual infusion phlebitis scale is use for measure the phlebitis according to this score.

There are different stages from score 0 to 5.

- Score 0 is no signs of phlebitis.
- Score 1 is possibly first sign of phlebitis.
- Score 2 is early stage of phlebitis.
- Score 3 is medium stage of phlebitis.
- Score 4 is advanced stage of phlebitis or start of thrombophlebitis.
- Score 5 is Advanced stage Thrombophlebitis. Patients who are getting score 3, 4, 5 according to scale, to those patients apply glycerin magnesium sulphate dressing at affected site,

The study conducted in the following phases,

Phase 1: Pre test level of Phlebitis was assessed using Jackson's visual infusion phlebitis scale.

Phase 2: 20gram of magnesium sulphate diluted in 100 ml of glycerin and this combination is applied on site of phlebitis with help of roller bandage and the limb was elevated. This procedure was repeated two times in a day continuous for 2 days

Phase 3: After second application of intervention the post test level of Phlebitis assessed by using the Jackson's visual infusion phlebitis scale.

Results

Table 1: Analysis of observational score on effectiveness of magnesiumsulphate with glycerin dressing on phlebitis among patient with peripheral intravenous cannula.

Group	N	Mean	Standard Deviation	Std. Error Mean	Mean Difference	T Value	P Value
Post Experimental	30	1.10	0.71	0.130	-1.43	7.454	<0.001
Control	30	2.53	0.78	0.142			

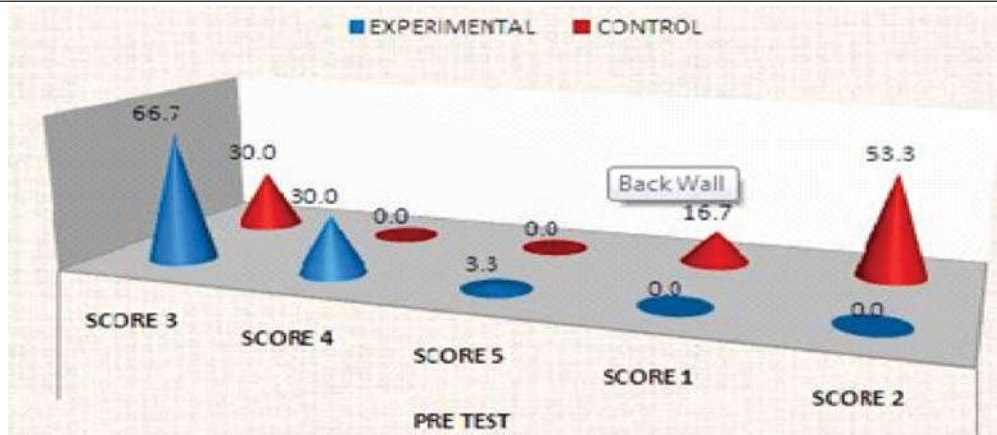


Fig 1: Cone diagram showing Pre Test Phlebitis Level among Experimental Group and Control Group

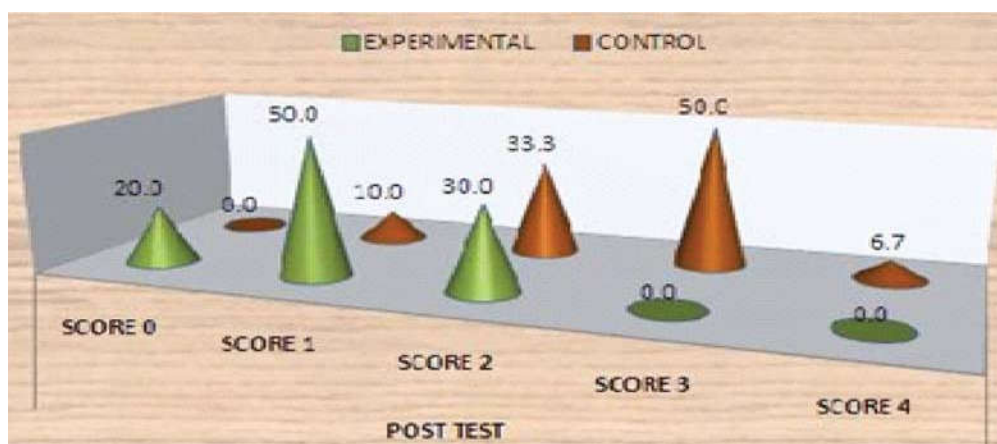


Fig 2: Bar diagram showing Post Test Phlebitis Level among Experimental Group and Control Group

Discussion

The main purpose of this analysis was conducted a experimental study was conducted in a selected hospital at puducherry the effectiveness of magnesium sulphate with glycerine on patients with phlebitis related to peripheral intravenous infusion. The sample consisted of 45 subjects who had developed intravenous infusion related phlebitis, the clinical features of phlebitis were measured by phlebitis measurement chart, erythema observation check list and pain scale. Three treatments were administered to 15 patients each for 3 days two times a day. The data analyzed by using ANOVA and t test. The findings of the study revealed that among the three modalities of treatment of phlebitis, it was found that magnesium sulphate with glycerine dressing was most effective in reducing in duration, swelling, palpable venous cord,

erythema and pain at $p < 0.001$. The pre-treatment pain score were 7.67 and it was reduced to 1.47 on the 3rd post-treatment day. The pre test of experimental group that majority 20(66.7%) hospitalized patient had medium stage of phlebitis, 9(30%) hospitalized patient had Advanced stage of phlebitis or start of thrombophlebitis and 1(3.3%) hospitalized patient had Advanced stage Thrombophlebitis.

The pre test of control group that majority 9(30%) hospitalized patient had medium stage of phlebitis, 5 (16.7%) hospitalized patient had possibly first signs of phlebitis and 16 (53.3%) hospitalized patient had Early stage of phlebitis.

The post test of experimental group that majority 15(50%) hospitalized patient had possibly first signs of phlebitis, 9(30%) hospitalized patient had Early stage of phlebitis and 6(20%) hospitalized patient had no sign of phlebitis.

The post test of control group that majority 15 (50%) hospitalized patient had medium stage of phlebitis, 10 (33.3%) hospitalized patient had Early stage of phlebitis had possibly first signs of phlebitis, 3 (10%) hospitalized patient had possibly first signs of phlebitis and 2 (6.7%) hospitalized patient had Advanced stage of phlebitis or start of thrombophlebitis.

In experimental group post test mean score 1.10, SD was 0.71 respectively. In control group post test mean score 2.53, SD was 0.78 respectively. The obtained value 7.454 statistically was significant at 0.001 level. So research hypothesis was accepted.

Conclusion

The study result showed that magnesium sulphate with glycerine application was effective in relieving pain and inflammation level among the IV infusion patients. This being a cost effective procedure and convenient measure, magnesium sulphate with glycerine application can be administered to treat the peripheral intravenous cannula induced phlebitis by nurses in their day to day caring for the IV infusion patients in IGGGH and PGL, Puducherry hospital setting.

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