

Incidence of Superficial Thrombophlebitis and its Determinants among Hospitalised Children

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Abstract

Background and Objective: The purpose of the study was to assess the incidence of superficial thrombophlebitis among Pediatric patients and to identify the determinants associated with the development of superficial thrombophlebitis among pediatric patients. *Material and Methods:* The research design used in this study was a descriptive cross-sectional study. Population of the study comprised of all the children who are on intravenous therapy. Four hundred samples were selected by convenient sampling. Data collection proforma included subjective data sheet, visual infusion phlebitis (VIP) scale and questionnaire to determine the determinants of superficial thrombophlebitis. *Results:* The incidence of thrombophlebitis was 80.75%. There was a significant association ($p < 0.05$) between the incidence of thrombophlebitis and site of cannulation, cannula size and cannulation duration. *Conclusion:* It was detected that the incidence of superficial thrombophlebitis was higher among hospitalised children receiving intravenous therapy in pediatric ward. Nurses need to be trained in skills required for cannulation. Early identification and prompt treatments are required to reduce the complications related to peripheral intravenous cannulation.

Keywords: Visual Infusion Phlebitis (VIP); Thrombophlebitis.

Introduction

Sarah (2008) expressed that Children are the valuable asset to the society. Illness and hospitalization gives a significant stress to both child and family. Every year millions of children are admitted to the hospital, and most of them required IV cannulation. The practice of using peripheral venous catheter is a general procedure in health care settings [1].

Macklin (2003) stated that For the introduction of medications, solutions and blood products, the peripheral venous catheters inserted into veins of the forearm and hands [2]. Ahlquist (2006) quoted that Systemic complications of IV therapy included fluid overload, emboli, fever and sepsis whereas local complications are infiltration and extravasation, thrombophlebitis, hematoma and clotting and

obstruction [3]. The prevalent complication is thrombophlebitis; that occurs with a peripheral venous catheter. It requires eviction of the catheter and placing of a new catheter at another site. Grune (2004) stated that Phlebitis is the inflammation of a vein associated with mechanical or chemical irritation or both. It is characterized by redness, warmth, pain and swelling [4].

Materials & Methods

A descriptive cross-sectional study design was used for this study.

Inclusion Criteria

Children who are on intravenous therapy in the age group of 1 month - 12 years.

Exclusion Criteria

- Children with central venous catheter on the same limb.
- Children with scalp vein cannulation.
- Children with dermatological disorder.
- Children diagnosed with a primary vasculitis.
- Children diagnosed with malignancy.
- Children receiving chemotherapeutic agents.

Method of sample selection

Non-probability sampling (convenient sampling) technique was used.

Description of a Tool

The tool consists of three sections:

Section A: Proforma for data collection consisting of 4 items seeking information about hospital number; age; gender and diagnosis of the patient.

Section B: Jackson's Visual infusion Phlebitis scale (Jackson; 1998) to assess and grade the signs of superficial thrombophlebitis at the peripheral intravenous catheter site. The scale included five signs and symptoms of superficial thrombophlebitis such as pain, erythema, swelling, palpable venous cord and pyrexia and grades were assigned based on the signs and symptoms. The scale also contained the management of each grade of phlebitis.

Section C: 14 questionnaires to determine the determinants of superficial thrombophlebitis. It consists of data and time of insertion of cannula, limb used for insertion of cannula, site used for the insertion of the cannula, cannulation size, duration of cannula in situ, material used for cannula fixation, dressing condition, restraint use, intravenous solution received, intravenous drug received, type of intravenous administration, number of cannulation at the same site prior to thrombophlebitis development, the person who cannulated and in which shift the cannula has been inserted.

Data Collection Procedure

Approval was obtained from the scientific committee and ethical committee. The study objective was explained to the subjects and their parents. Written informed consent got.

Every day patients who had intravenous cannula was observed for phlebitis using visual infusion phlebitis scale and data was collected based on the questionnaire.

Data Analysis:

The data on categorical variable was expressed as frequency and percentage. Incidence of thrombophlebitis was expressed in percentage. The association of incidence of phlebitis with the demographic variables was carried out by chi-square test.

Results

Majority of the study participants (37%) were less than one year. Regarding gender 61.8% were males. Pertaining to diagnosis, majority (24%) of patients had respiratory conditions. Majority of cannulation (45.4%) was done on right upper limb. The most prevalent site (59%) was on the dorsum of upper limb. The majority (60.7%) of the cannulations were of 24G size. Regarding duration in situ, (33.5%) patients cannula was changed on the second day. In majority (95.7%) patients, elastoplasts was used for fixation of cannula. Majority (95.5%) of patients did not have any restraint for stabilizing the site of cannulation. Regarding personnel, 88.5% cannulations were done by doctors. Pertaining to shift in which cannulation was done, 214 (53.5%) of cannulation was done during the morning shift.

The incidence of thrombophlebitis among hospitalized children receiving intravenous therapy in paediatric wards was 80.75% in which 3.5% (14) developed grade 1, 29% (116) developed grade 2, 41.3% (165) developed grade 3 and 7% (28) developed grade 4 thrombophlebitis.

The findings of the study showed that diagnosis, site for cannulation, cannula size, cannulation duration, material for fixation of cannula and number of drugs infused were associated with the development of superficial thrombophlebitis.

Discussion

The incidence of thrombophlebitis among hospitalized children receiving intravenous therapy in pediatric wards was 80.75% in which 3.5% (14) developed grade 1, 29% (116) developed

grade 2, 41.3% (165) developed grade 3 and 7% (28) developed grade 4 thrombophlebitis.

The above findings were supported by the following studies:

Salgueiro oliveira et al. carried out a prospective observational study of the patients in Portugal to identify the phlebitis incidence and the associated risk factors responsible for its development in medical ward of a central hospital. A total of 1,244 catheters were assessed, and 317 were reinserted or removed. According to his study, phlebitis incidence was found to be 11.09% [4]. Singh et al. carried out a study on the use of peripheral IV catheters related thrombophlebitis and its risk factors in an adult study population belonging to a teaching hospital. The objective of the study was to assess the thrombophlebitis occurrence in relation with peripheral IV catheters and to bring to light the probability factors associated with its development. Two hundred and thirty clients were selected for the study who were given first time IV therapy during the period of last two months. Every day the site was assessed for thrombophlebitis. Jackson standard VIP scale was used to determine the severity of phlebitis in their study. It was seen that thrombophlebitis developed in 136 individuals (59.1%) and the incidence was high with male gender, insertion at the sites of forearm and small catheter size.

Conclusion

The present study showed a higher incidence of superficial thrombophlebitis. Nurses can take particular attention in the selection of site, cannula

size and material used for fixation of cannula. Nurses can take a significant role in screening the cannula site for superficial thrombophlebitis thereby reducing the extent of complications.

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