Effect of Cold Application on Local Problems among Patients Receiving Subcutaneous Enoxaparin

Thesis

Submitted for Fulfillment of the Master Degree in Medical- Surgical Nursing

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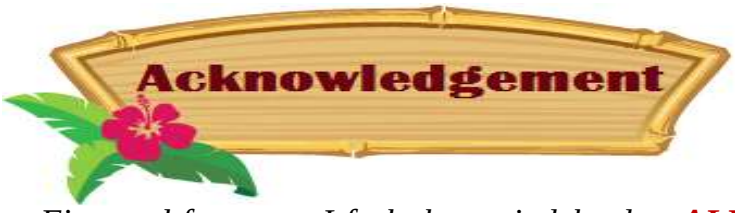

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Walaa Eid Zaki Ahmed

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ABSTRACT

Subcutaneous enoxaparin administration often causes problems such as pain; bruise and hematoma at the injection sites. In terms of these problems, cold application has been found to have various therapeutic benefits as relieve pain by produce localized anesthetic effect and controls bleeding by causing vasoconstriction. **Aim of the study:** To investigate the effect of cold application on local problems among patients receiving subcutaneous enoxaparin. **Design:** Self-controlled trial design was utilized. **Setting:** The study was carried out in general surgery department, orthopedic surgery department, and chest Intensive Care Unit at Beni-seuf University Hospital. **Study subjects:** A purposive sample of 60 patients was included in the study. **Data collection tools:** Data were obtained through Patient assessment tool, Bruising Category Scale, Visual Analogue Scale for pain and Hematoma Formation Scale. **Results:** All studied patients had pain and 53.3% developed bruise at injection site when they received enoxaparin without cold application but 81.6% of studied patients had pain and 21.7% developed bruise when they received injection with cold application. Meanwhile, the majority of the studied patient did not develop hematoma whether cold applied at injection site or not. **Conclusion:** The pre-injection cold application at enoxaparin injection site was effective in reducing the occurrence of pain and bruising. Moreover, there was statistically significant relation between the patients' pain intensity, the size of bruising and their demographic characteristics; age and gender. **Recommendations:** Cold application should be included in standard protocol for the administration of SC enoxaparin and providing on-going and regular in-service educational programs about it for nurses.

Key words: Enoxaparin, Subcutaneous, Local problems, Cold application.

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List of abbreviations

ACT : Anticoagulation Therapy

ADP : Adenosine Diphosphate

AF : Atrial Fibrillation

ALT : Alanine Transaminase

APTT : Activated Partial Thromboplastin Time

AST : Aspartate Transaminase

CBC : Complete Blood Count

HIT : Heparin-Induced Thrombocytopenia

ICCs : Intraclass Correlation Coefficients

INR : International Normalized Ratio

ICU : Intensive Care Unit

I.V : Intravenous

LMWH : Low Molecular Weight Heparin

NSAIDS : Non-steroidal Anti-Inflammatory Drugs

PC : Prothrombin Concentration

PT : Prothrombin Time

RBCS : Red Blood Cells

SC : Subcutaneous

SD : Standard Deviation

SPSS : Statistical Package for Social Science

TENS : Transcutaneous Electrical Nerve Stimulation

UFH : Unfractionated Heparin

US : United State

VAS : Visual Analog Scale

Introduction

Anticoagulants are the cornerstone therapy for prevention and treatment of thrombosis as it can inhibit thrombogenesis by altering various pathways within the clotting cascade or by decreasing thrombin generation. It is prescribed for prophylaxis against or treatment of various medical conditions as venous thrombosis, pulmonary embolism and thromboembolic complications associated with atrial fibrillation (AF). Unfractionated heparin (UFH) and low molecular weight heparin (LMWH) are the anticoagulants of choice in acute thrombosis due to their rapid onset of antithrombotic activity ***(Alquwaizani, Buckley, Adams, & Fanikos, 2013).***

Enoxaparin which is LMWH has a much more predictable anticoagulant effect, greater bioavailability and a longer half-life than unfractionated heparin. It's administered subcutaneously and don't need frequent lab monitoring except in patients with significant renal impairment. The initial dose of enoxaparin, calculated based on patient weight. Although enoxaparin is more expensive than unfractionated heparin, the savings in I.V equipment، lab monitoring, and nursing time make it overall more cost-effective ***(Best & Grainger, 2004).***

Subcutaneous administration of enoxaparin often causes local problems such as pain, bruise and hematoma at the injection site. Bruising and hematoma are caused by the escape of blood from damaged blood vessels into SC tissues. These local problems lead to patient physical and psychological discomfort and cause additional stress for patients. Nurses play a key role in the administration of enoxaparin injections as they are often required to administer injections and deal with any problems. Thus, it is important that nurses use an injection technique that minimizes the incidence of local problems ***(Chan, 2001).***

In order to deal with local problems of enoxaparin, it is found that cold application at the injection site is effective in preventing and reducing pain, bruise and hematoma as it results in vasoconstriction, which reduces cutaneous blood flow, thus decreasing the local inflammatory response and edema formation, thus decreasing the incidence and size of bruise and hematoma furthermore it produce anesthetic effect that slowing or eliminating the transmission of pain signals ***(Quinlan et al., 2017; Varghese, Walia, Sharma, & Kaur, 2006).***

Significance of the Study:

The administration of SC injections is an important part of drug administration and a common nursing intervention in clinical practice. Enoxaparin is administered subcutaneously by nurses to patients at risk of developing thromboembolism or who have thromboembolic disease ***(Hunter, 2008).***

Enoxaparin adverse effects include pain, bruising, hematoma, melena and thrombocytopenia. Of these adverse effects, the occurrence of bruising is highly variable, from 20.6% to 88.9%. Bruises might affect subsequent procedures by reducing the surface area available for administration also pain leads to discomfort, anxiety and possibly refusal of treatment because of reduced trust in nurses' competence to perform the injections ***((Hunter, 2008; Palese, Aidone, Dante, & Pea, 2013).***

In terms of these adverse effects, the application of cold is a non-pharmacological and inexpensive treatment. With cold application, the blood vessels will be contracted, the blood flow decreased, the inflammatory process reduced, and metabolism of the tissue decreased. All these effects decrease the intensity of the pain, and the size of hematoma ***(Crystal, Townson, Cook, & LaRoche, 2013).***

Aim of the study

This study aimed to investigate the effect of cold application on local problems among patients receiving subcutaneous enoxaparin.

Research hypothesis:

- The pre-injection cold application at the injection site will have a positive effect in prevention and reduction of pain intensity among patients receiving subcutaneous Enoxaparin.
- The pre-injection cold application at the injection site will have a positive effect in prevention and reduction of bruising among patients receiving subcutaneous Enoxaparin.
- The pre-injection cold application at the injection site will have a positive effect in prevention and reduction of hematoma among patients receiving subcutaneous Enoxaparin.