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ORIGINAL ARTICLE

Related factors with extravasation of non-cytostatic agents in peripheral vein catheters[☆]

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KEYWORDS

Peripheral vein catheter;
Extravasation;
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Abstract

Objective: To know the independent variables related to the occurrence of extravasation in patients with peripheral vein catheters (PVC).

Material and method: Retrospective study carried out in 6 longitudinal cuts between July 2013 and January 2014. A total of 1442 PVC were reviewed, of which 730 met the inclusion criteria, and were divided into 2 groups: extravasation and not extravasation, with 365 cases each. The variables of age, gender, admission unit, catheter gauge, insertion site, previous insertion into the same limb, hospital unit where the insertion took place, communication difficulties, personal health history and analysed parenterally drug administered were considered.

Results: Risk factors to develop extravasation were: female gender, with previous insertion in the same limb, <72 h PVC of insertion, communication difficulties, personal health history of neoplasia and KCL, gentamicin or beta lactam treatment.

Conclusions: Our study allows to know the variables that are related to the emergence of extravasations in patients with non-cancer treatments (gender, medical service of admission, catheter gauge, elapsed time since the insertion, patient communication difficulties, personal health history, and intravenous treatments), as well as the factors that may be considered protective.

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PALABRAS CLAVE

Catéter venoso
periférico;
Extravasación;
Terapia intravenosa

Factores relacionados con extravasaciones de agentes no citostáticos en catéteres venosos periféricos**Resumen**

Objetivo: Conocer las variables independientes que tienen relación con la aparición de extravasación en pacientes portadores de catéteres venosos periféricos (CVP).

Material y método: Estudio retrospectivo desarrollado en 6 cortes quincenales entre julio de 2013 y enero de 2014. Se revisaron un total de 1.442 CVP, de los que 730 cumplían los criterios de inclusión y se dividieron en 2 grupos: extravasación y no extravasación, con 365 casos cada uno. Se analizaron las variables edad, sexo, servicio de ingreso, calibre del CVP, lugar de inserción, inserción previa en la misma extremidad, unidad donde se insertó el CVP, dificultad de comunicación, antecedentes personales de salud y fármacos parenterales administrados.

Resultados: Los factores de riesgo asociados a tener extravasación fueron: ser mujer, con inserción previa en el mismo brazo, < 72 h de la inserción, con dificultades en la comunicación, tener antecedentes de neoplasia y con tratamiento de CLK, gentamicina o betalactámicos.

Conclusiones: Nuestro estudio permite conocer las variables que tienen relación con la aparición de extravasaciones en pacientes con tratamientos no oncológicos (sexo, servicio médico de ingreso, calibre del catéter, tiempo transcurrido desde la inserción, facilidad de comunicación del paciente, antecedentes y tratamientos intravenosos), así como los factores que pueden considerarse protectores.

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What is known?

There is a great deal of literature on the extravasation of cytostatic agents and related risk factors. There are few publications that describe these factors in non-oncological treatments.

What do we contribute?

A knowledge of the risk factors for extravasation in intravenous therapy with non-cytostatic treatments in patients with peripheral venous catheters. Widening the field in the search for action for improvement regarding the variables associated with this complication.

Introduction

Admission to hospital implies the use of invasive devices in patients, of these, the peripheral venous catheter (PVC) is the most commonly used. Ninety-five percent of patients admitted to Spanish hospitals are given one of these devices.¹

There are several PVC complications including, phlebitis, infection and extravasation. Extravasation is defined by the *Infusion Nurses Society* (INS) as the inadvertent administration of substances into the surrounding tissue. Symptoms are pain, pruritis or burning sensation, skin reddening or pallor,

swelling and cold or hot skin. Extravasation can be considered when the flow rate decreases or there is no venous return through the PVC. There are various causative factors, mechanical force that can displace the PVC, obstructed blood flow and/or the inflammatory process. Injury occurs if the surrounding tissues are exposed to the extravasated fluid due to a difference in osmolarity/ph, ischaemia, compression and toxicity of the substance infused.²⁻⁴

International societies such as the INS and studies undertaken in our country such as the SÉNECA project state that extravasation should be considered a sentinel event, since it can cause physical harm to the patient, can be documented and is not an expected event.⁵⁻⁷

Risk factors for PVC extravasation are: small or fragile veins, lymphoedema or limb amputation, obesity, multiple previous venipunctures, skin disease (eczema, psoriasis), the patient's movement and sensory deficit preventing them feeling the discomfort caused.

The incidence of extravasation published in Spain is between 11.6 and 22.8%,⁸⁻¹⁰ and the international incidence varies between 0.1¹¹ and 61%,¹² which implies huge variability. The majority of these studies relate to oncological medication,^{2,13-17} which is not used in our hospital. Due to this, we cannot compare the incidence of extravasation in our environment and therefore we cannot conclude whether our data are consistent with those published.

Due to the significance of extravasation as a sentinel event in daily nursing practice, and to the few published studies on non-oncological medication, we decided to undertake a study with the objective of establishing the independent variables related to the onset of extravasation: demographic data, PVC features, risk factors,¹⁸⁻²⁰ and drugs administered.^{3,4,16}

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