



# Enfermería Clínica

[www.elsevier.es/enfermeriaclinica](http://www.elsevier.es/enfermeriaclinica)



## ORIGINAL ARTICLE

### Incidence and risk factors of phlebitis associated to peripheral intravenous catheters<sup>☆</sup>

### Incidencia y factores de riesgo de flebitis asociadas a catéteres venosos periféricos

Loreto Arias-Fernández<sup>a,b</sup>, Belén Suárez-Mier<sup>a</sup>, María del Carmen Martínez-Ortega<sup>a</sup>, Alberto Lana<sup>b,\*</sup>

<sup>a</sup> Servicio de Medicina Preventiva, Hospital Universitario Central de Asturias, Oviedo, Spain

<sup>b</sup> Departamento de Medicina, Área de Medicina Preventiva y Salud Pública, Universidad de Oviedo, Oviedo, Spain

Received 29 December 2015; accepted 12 July 2016

#### KEYWORDS

Phlebitis;  
Peripheral venous  
catheterization;  
Risk factors;  
Incidence;  
Nursing

#### Abstract

**Objective:** To determine the incidence and risk factors of phlebitis associated to the care of peripheral vascular catheters (PVC).

**Method:** Prospective cohort study at the Central University Hospital of Asturias (Spain). A total of 178 PVC were observed daily until their extraction. The incidence of phlebitis was measured using the visual infusion phlebitis scale, that distinguishes between grade I (possible phlebitis) and II (phlebitis). The independent diagnoses of phlebitis made by staff nurses were also collected. Finally, data about the insertion and the care of the PVC was also obtained. The incidence of phlebitis and the validity of the diagnoses made by staff nurses were calculated and the risk factors of phlebitis were determined by means of logistic regression.

**Results:** 5.6% of the PVC presented phlebitis, 21.3% possible phlebitis and 11.2% had phlebitis according to nurses' criteria. The staff nurses had a sensitivity of 100%, a specificity of 94% and a positive predictive value of 50% in the diagnosis of phlebitis. After adjusting for potential confounders, the use of an extension tube as an accessory of the PVC was an independent predictor of phlebitis (odds ratio: 4.8;  $P=0.04$ ), but a PVC size of 22/24 gauges was associated with lower phlebitis incidence (odds ratio: 0.2;  $P=0.02$ ).

**Conclusions:** Clinical phlebitis assessment is difficult because the agreement for phlebitis diagnosis is low. To minimise the incidence of phlebitis would be recommended to choose the smallest PVC size possible and to avoid using an extension tube as an accessory of the PVC.

© 2016 Elsevier España, S.L.U. All rights reserved.

<sup>☆</sup> Please cite this article as: Arias-Fernández L, Suárez-Mier B, Martínez-Ortega MC, Lana A. Incidencia y factores de riesgo de flebitis asociadas a catéteres venosos periféricos. Enferm Clin. 2016. <http://dx.doi.org/10.1016/j.enfcli.2016.07.008>

\* Corresponding author.

E-mail address: [lanaalberto@uniovi.es](mailto:lanaalberto@uniovi.es) (A. Lana).

<http://dx.doi.org/10.1016/j.enfcli.2016.07.002>

2445-1479/© 2016 Elsevier España, S.L.U. All rights reserved.

**PALABRAS CLAVE**

Flebitis;  
 Cateterización  
 venosa periférica;  
 Factores de riesgo;  
 Incidencia;  
 Enfermería

**Resumen**

**Objetivo:** Determinar la incidencia de flebitis y los factores de riesgo relacionados con el cuidado de los catéteres venosos periféricos (CVP).

**Método:** Estudio de cohortes prospectivo en el Hospital Universitario Central de Asturias. Se incluyeron 178 CVP que fueron observados diariamente hasta su retirada. La ocurrencia de flebitis fue medida con la escala visual de flebitis por infusión, que permite distinguir entre grado I (posible flebitis) y grado II (flebitis). También se recogió el diagnóstico de flebitis que realizó de forma independiente el personal de enfermería de las unidades. Por último, se obtuvo información sobre la inserción y el cuidado del CVP. Se calculó la incidencia de flebitis y la validez de los diagnósticos realizados en la unidad y, mediante regresión logística, se identificaron los factores de riesgo de flebitis.

**Resultados:** El 5,6% de los CVP presentaron flebitis, el 21,3% posibles flebitis y el 11,2% flebitis según el criterio del personal enfermero. La sensibilidad de los profesionales para diagnosticar flebitis fue del 100%, la especificidad, del 94%, y el valor predictivo positivo, del 50%. Después de controlar los potenciales confusores, la utilización de alargadera como accesorio del CVP incrementó el riesgo de flebitis (odds ratio: 4,8;  $p = 0,04$ ) e insertar un catéter de calibre 22/24 gauges lo disminuyó (odds ratio: 0,2;  $p = 0,02$ ).

**Conclusiones:** La falta de consenso sobre el diagnóstico de la flebitis dificulta su valoración por parte de los profesionales. Para minimizar la incidencia de flebitis sería aconsejable elegir el calibre de CVP más pequeño posible y evitar el uso de alargaderas como accesorio.

© 2016 Elsevier España, S.L.U. Todos los derechos reservados.

**What is known?**

Phlebitis is one of the most common complications associated with peripheral venous catheterisation. The variability in estimates makes study of a complication whose risk factors require clarification difficult.

**What do we contribute?**

Staff nurses are very sensitive but less specific in making a diagnosis of phlebitis. The use of an extension tube as a catheter accessory and a wider bore are risk factors associated with nursing care.

**Introduction**

The World Health Organisation estimates that 5–10% of patients suffer some form of harm while receiving care in technologically developed hospitals; this is fundamentally due to healthcare-related infections.<sup>1</sup> Nurse-managed healthcare very often requires the insertion of a peripheral venous catheter (PVC). This is the most common invasive procedure carried out in hospitals and has an incidence varying between 70% and 80% of hospitalised patients.<sup>2,3</sup> The procedure can compromise patient safety since it is associated with local and systemic

complications such as infections at the insertion point, phlebitis, bacteraemia and sepsis.<sup>2,3</sup> Phlebitis symptoms are the most common complication,<sup>3,4</sup> since, although the variability in estimates is enormous, the estimated prevalence ranges between 20% and 65% of patients with a PVC.<sup>5</sup>

Phlebitis is defined as the inflammation of a vein due to a disturbance the endothelium during or after intravenous infusion. It is characterised by the following symptoms, pain and local swelling, erythema around the puncture site or along the course of the vein, local heat, palpable venous cord accompanied or otherwise by a purulent discharge and/or fever. Venous thrombosis can occur in the most serious cases.<sup>4,6,7</sup> The consequences of phlebitis can be major and affect both the patient and the healthcare system. Patients can experience pain and distress, anxiety, impaired venous pool, eruption of their prescribed therapy. They can require further treatment, suffer bacteraemia or require an increased hospital stay, amongst other consequences. Furthermore, phlebitis can result in increased human and material health care costs. It is estimated that PVC insertion costs around 25 dollars, not to mention the suffering caused to the patient or the time taken by the practitioner to perform the technique.<sup>8</sup> In terms of annual morbidity, the incidence of these adverse effects is considerable due to the increasing use of PVC and the high incidence of phlebitis.<sup>2</sup>

There is abundant scientific literature regarding the risk factors and complications associated with central venous catheters. However, there is little literature on phlebitis associated with PVC, and it is less conclusive.<sup>2</sup> According to Hadaway,<sup>9</sup> the causes of infections and phlebitis

Download English Version:

<https://daneshyari.com/en/article/8928883>

Download Persian Version:

<https://daneshyari.com/article/8928883>

[Daneshyari.com](https://daneshyari.com)