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Essay

What is the need to place a vascular access for anaesthetic procedures in children?☆



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ABSTRACT

Introduction: Vascular access in children has been considered an essential part of safe in paediatric anaesthesia. However, it requires great skill and it has risks and complications. There is a current controversy about when it is required, especially in patients in whom access is difficult and are scheduled for minor and short-term procedures.

Objective: To reflect on the factors that must be considered regarding the placement of peripheral vascular access in children for peri-operative management, and to provide tools to help with the decision of placing a vascular access.

Methodology: A non systematic review was made to find the indications and risks of vascular access; and a reflection on the main considerations to think about when it is necessary to place a vascular access in children.

Results: The review of the literature resulted in relevant considerations that need to be emphasised when deciding to place a vascular access in children.

Conclusion: The risk and benefit of any intervention in children should be assessed. The final decision to place a venous access for peri-operative management of children depends on patient age, degree of difficulty of the vascular access, type of procedure, duration and, finally, the anaesthetist's own perception of safety. Individual experience counts when it comes to the final decision.

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¿Cuál es la necesidad de colocar un acceso vascular en procedimientos anestésicos en niños?

RESUMEN

Palabras clave:

Catéteres
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Quirófanos

Introducción: El acceso vascular en niños se ha considerado una parte esencial de la seguridad en anestesia pediátrica. Sin embargo, requieren gran destreza y no está exento de riesgos y complicaciones, por lo cual existe una controversia vigente sobre cuándo es necesario colocarlos, sobretodo en aquellos pacientes que son difíciles de canalizar y están programados para procedimientos menores y de corta duración.

Objetivo: Hacer una reflexión de los factores que se deben considerar para colocar un acceso vascular periférico en niños para el manejo perioperatorio y tener herramientas para decidir cuando es conveniente colocar un acceso vascular.

Metodología: se hizo una búsqueda no sistemática en la literatura sobre las indicaciones y riesgos de los accesos vasculares; y se hizo una reflexión de las principales consideraciones que se deben tener en cuenta para decidir cuándo colocar un acceso vascular en los niños.

Resultados: se revisó la literatura y se sacaron algunas conclusiones para enfatizar cuáles consideraciones son relevantes en el momento de decidir si es necesario colocar un acceso vascular en pediatría.

Conclusión: Se debe evaluar el riesgo y el beneficio de cualquier intervención que se realice en los niños. La decisión final sobre colocar o no un acceso venoso para el manejo perioperatorio de los niños depende de la edad, del grado de dificultad para el acceso vascular, del tipo de procedimiento, de la duración y finalmente, de la percepción de seguridad que tiene cada anestesiólogo. La experiencia individual cuenta en la decisión final.

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Introduction

In peri-operative medicine, the availability of a vascular access has been considered part of the safe practice of anaesthesia. Placing a peripheral venous catheter is the easiest and fastest technique for obtaining venous access.^{1,2} However, this idea is controversial among paediatric anaesthetists, some of whom believe that the need for vascular access depends on patient, procedure and anaesthetist-dependent factors.

One of the arguments supporting this controversy is the greater difficulty for achieving venous access in children because of their anatomical characteristics, their physiology and the greater skill required on the part of the healthcare providers.

Objective

The objective of this article is to reflect on the factors that need to be considered before placing a peripheral vascular access for peri-operative management in children, and to gain tools for deciding when placement of a vascular access is warranted.

This reflection article is intended to present arguments in favour and against but not to serve as a clinical practice guideline or to settle the existing controversy.

Methodology

A search was conducted in the literature regarding this topic using Pubmed and Academic Google, as well as the terms

Vascular Access Devices, Vascular Access, Intravenous cannula, Paediatrics and anaesthesia.

Results

Anaesthetic procedures are performed in children in daily clinical practice under controlled conditions or as part of elective procedures in the operating room. Obtaining vascular access in children poses a dilemma because of its huge difficulty in some cases, potential complications, stress, anxiety, and the emotional and physical pain associated with this procedure. Even in experienced hands, the difficulty is apparent. Also, given the short time period during which the vascular access is required for certain procedures, in haemodynamically stable, non-critically ill individuals, or in very short outpatient procedures, an adequate anaesthetic process (analgesia, anaesthesia, immobilisation, unconsciousness and amnesia) may be achieved by means of other alternatives that do not require a venous access.

The main indications for establishing a vascular access in paediatric patients include the intravenous administration of fluids, medications, chemotherapy, contrast media and/or blood products; parenteral nutritional support; drawing of blood samples; and invasive haemodynamic monitoring.^{3,4} There are no absolute contraindications for peripheral intravenous cannulation in paediatrics, but venous access should be avoided in an injured limb with fractures, infections or burns; and when irritating solutions with a pH <5 or >9, or high osmolarity > 600 mOsm/L must be administered through a central vascular access.³

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