Evaluation of the Use of Peripherally Inserted Central Catheters in Orthopedic Patients at the Day Hospital of University of São Paulo

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Abstract

The use of peripherally inserted central catheters (PICCs) in hospitalized patients is already well established by studies and guidelines, and PICCs are widely used at our institution. However, few studies have been published examining patients using the device in day hospital systems; specifically, if the device brings about early dehospitalization, if it facilitates quick return to coexistence in society and to work, and how to plan medication administration through this system. Our general objective was to evaluate the advantages and disadvantages of the use of PICCs in patients undergoing prolonged intravenous treatment. We selected patients using PICCs in the day hospital at the Institute of Orthopedics and Traumatology at Clinics Hospital of the School of Medicine of the University of São Paulo, conducted a semistructured interview, and did an analysis of medical records. The most frequent diagnoses that led to use of a PICC were postoperative infection (53.84%) and osteomyelitis (23.07%). Teicoplanin was the most common drug prescribed, followed by vancomycin. Regarding the puncture site, the basilic vein prevailed with 69.23%. Most of the catheters (61.54%) remained in place from 60 to 150 days. The end of the drug therapy was the reason for removal in 66.4% of cases. Regarding pain assessment, 88.47% of patients declared they did not feel any pain or felt moderate pain during the PICC insertion procedure. Based on the data collected, it can be concluded that PICCs are reliable devices for a wide variety of intravenous infusions used in patients treated at our day hospital.

Keywords: *central venous catheterization, day hospital, nursing, orthopedics*

Introduction

Peripherally inserted central catheters (PICCs) are widely used because they are an effective and easy-to-maintain device for the infusion of medications. In orthopedic settings PICC devices represent an essential tool for prolonged treatment of various orthopedic pathologies, such as osteometabolic diseases, rheumatoid arthritis, osteogenesis imperfecta, and infections. Infection is a great challenge, considering that it requires at least 1 month of intravenous treatment.[1-4]

Repetitive venipuncture can cause peripheral vessels to develop complications, which can be local or systemic, often leading to the need for a central venous catheter due to impairment of a patient's vascular system.[5,6] Accordingly, a strict evaluation of the characteristics of the medication to be infused should be carried out. This evaluation should involve checking the pH, the osmolarity, the characteristics of the drug (eg, irritant or vesicant), and the length of

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treatment. This evaluation helps nurses select the best intravenous device.[6,7]

The use of PICCs offers several advantages over short peripheral venous catheters. One example is nontherapeutic interruption because the same device is used throughout the treatment, minimizing the complications provoked by multiple punctures, which are common to peripheral catheters. The wrong indication for a peripheral device can, in the short run, damage a patient's venous route, often requiring the installation of a more invasive central device (such as a tunneled or totally implantable catheter) to ensure the continuity of the treatment, increasing the length of hospital stay and hospital costs.

The use of PICCs in hospitalized patients is well established and described in several studies and guidelines and the device is widely used at our hospital because it perfectly meets the patients' profiles (ie, young trauma victims). However, few studies have been published about the use of PICCs with dehospitalized patients who returned to the day hospital only to receive medication and catheter maintenance. This practice is already usual in our hospital and has been increasing yearly because it allows patients to return to their professional and social routines and also decreases the length of hospital stay and bed occupancy.

Methods

We conducted a prospective, descriptive, exploratory survey with a quantitative and qualitative approach to analyze the results. The study was developed and conducted at the Institute of Orthopedics and Traumatology at Clinics Hospital of the School of Medicine of the University of São Paulo. The data collection was performed at the same institute, via analysis of medical records and interviews with patients undergoing prolonged treatment with the use of a PICC during 2012. The data collected from medical records were those related to the prescription of the catheter (medication to be administered to evaluate pH and/or osmolarity); estimated treatment time; date of insertion; reason for removal of the catheter; educational guidance offered to the patient; and confirmation, through the nurse's notes, of the delivery of the folder of guidelines and care for the PICC after discharge (Appendix 1).

Table 1. Sample Selection Criteria

Inclusion criteria
Age >18 y
Currently using a peripherally inserted central catheter device
Intravenous therapy duration of at least 15 d
Capable of understanding and verbalizing appropriately to participate in the interview
Medical records with enough information for the research

The sample consisted of 26 in-treatment patients selected through the inclusion criteria shown in Table 1 and treated during the study period of 6 months.

The data were treated in absolute and relative frequency, analyzed in their descriptive form, and are discussed here according to the pertinent literature.

Results

Semistructured interviews were held during the data collection period together with an evaluation of the medical records of patients who had undergone or are undergoing prolonged intravenous treatment using PICCs in our day hospital. The final sample was 26 patients. Figure 1 shows the age group of patients treated with PICCs in our day hospital.

The most frequent diagnoses that led to PICC use were postoperative infections (53.84%) followed by osteomyelitis (23.07%), as shown in Figure 2.

All patients included in our study were prescribed the use of PICC for extended antibiotic therapy. Teicoplanin was the most-used drug, followed by vancomycin and amikacin, as shown in Figure 3.

All the drugs used are either irritating or vesicant, as shown in Table 1, whereas Table 2 shows characteristics of the drugs used on the patients treated with a PICC device at our day hospital.

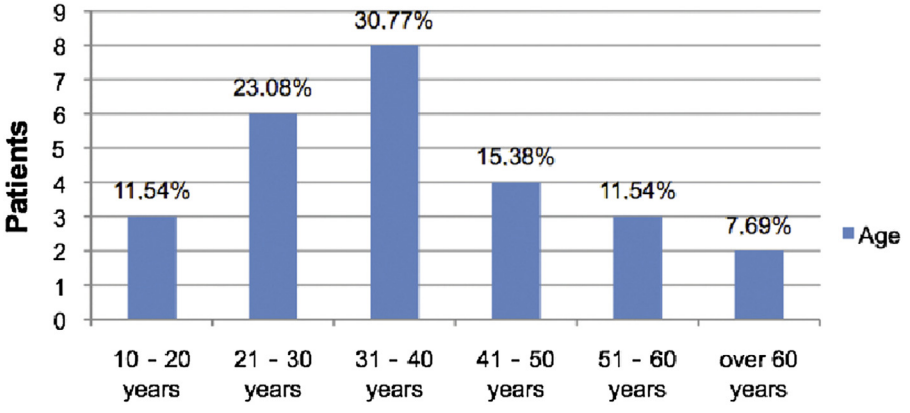

Figure 1. Age range of patients who made use of a peripherally inserted central catheter at the day hospital of University of São Paulo, São Paulo, Brazil (N = 26).