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ORIGINAL ARTICLE

Phlebitis associated with peripheral intravenous catheters in adults admitted to hospital in the Western Brazilian Amazon*

Flebite associada a cateteres intravenosos periféricos em adultos internados em hospital da Amazônia Ocidental Brasileira

Flebitis asociadas con catéteres intravenosos periféricos en adultos ingresados en hospital de la Amazonía Occidental Brasileña

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ABSTRACT

Objective: To identify the presence of phlebitis and the factors that influence the development of this complication in adult patients admitted to hospital in the western Brazilian Amazon. **Method:** Exploratory study with a sample of 122 peripheral intravenous catheters inserted in 122 patients in a medical unit. Variables related to the patient and intravenous therapy were analyzed. For the analysis, we used chi-square tests of Pearson and Fisher exact test, with 5% significance level. **Results:** Complication was the main reason for catheter removal (67.2%), phlebitis was the most frequent complication (31.1%). The mean duration of intravenous therapy use was 8.81 days in continuous and intermittent infusion (61.5%), in 20G catheter (39.3%), inserted in the dorsal hand vein arc (36.9 %), with mean time of usage of 68.4 hours. The type of infusion (p=0.044) and the presence of chronic disease (p=0.005) and infection (p=0.007) affected the development of phlebitis. **Conclusion:** There was a high frequency of phlebitis in the sample, being influenced by concomitant use of continuous and intermittent infusion of drugs and solutions, and more frequent in patients with chronic diseases and infection.

DESCRIPTORS

Phlebitis; Catheterization, Peripheral; Infusions, Intravenous; Inpatients; Nursing Care.

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INTRODUCTION

Intravenous therapy (IVT) is an essential intervention, frequently performed in health institutions [1]. The aim is to promote the distribution of fluids in the circulatory system, blood components, parenteral nutrition and intravenous action of drugs and others with low bioavailability when administered by other routes, in situations of intensive, emergency, perioperative and clinical care [2].

To perform the IVT, a catheter needs to be inserted into a vein. There are several types of catheters used in clinical practice, peripheral intravenous catheters (PIC) are the most frequently used, since they provide access to the vascular system faster, are less invasive and less complex, estimated to be inserted in approximately one third of patients admitted to hospitals [3-5].

Although the use of PIC is associated with many therapeutic benefits, it may be related to the development of local and systemic complications such as extravasation, infiltration, hematoma, infection and phlebitis [6-8]. The incidence of systemic infections related to PIC is low, and is rarely described, but is frequently associated with phlebitis [3, 9].

Phlebitis is one of the most frequent and severe local complications related to PIC use, characterized by inflammation of the vein wall with symptoms in variables degrees of edema, pain and erythema around the catheter insertion site or along the blood vessels, with the possible prognostic towards a palpable fibrous cord, and intense redness, tenderness and fever. It may be classified, in accordance with the predisposing factors of complication in mechanical phlebitis, resulting from the trauma caused by PIC in the vessel wall during the puncturing movement or during PIC use; chemical phlebitis, when there are relationship with infusion fluids or solutions with low solubility, extreme pH or high osmolarity, or due to the presence of small particles in the solution; and infectious-related phlebitis contamination of solutions and aseptic technique misconduct during insertion and PIC handling devices and solutions [1,5-6,10-12].

Several studies describe the risk factors related to the development of phlebitis, but the results are conflicting depending on the population studied and the research methods. Some authors [3,13] verified as risk factors: being female, the catheter size, anatomical location, catheter used for longer than 48 hours and the performance of rapid infusions of drugs with high osmolarity. However, another study [14] did not identify the factors: being female and the catheter size as risk factors. A research [15] showed no influence on the size and PIC insertion time in phlebitis, however, there was a relationship with the need for PIC reinsertion and use of certain substances such as potassium chloride, antibiotics, amiodarone hydrochloride, and diltiazem hydrochloride.

Regarding the frequency of complications, researches show very different rates, ranging from zero to over 50%. A research that assessed 952 PIC in adults showed that 18.9% of PIC had been removed due to the occurrence of phlebitis [16]. In a study conducted in Turkey, with 439 catheters inserted in 103 adult patients, the occurrence of phlebitis was 41.2% [6]; similar study in Brazil analyzed 234 insertions of catheters and identified presence of phlebitis in 55.6% of the PIC analyzed [17].

When developing phlebitis during IVT infusion, the patient can require an early withdrawal of the PIC and reinsertion elsewhere. This situation leads to discontinuation of therapy and imposes stress for patients, due to the need for multiple intravenous punctures and cause rising cost of care [1,7].

Like other health outcomes, the occurrence of phlebitis may be related to the care environment and the quality of nursing practice, thus the aim of this study is to identify the presence of phlebitis in patients with PIC admitted to a medical clinic of a hospital in the Western Brazilian Amazon, analyzing patient characteristics and the IVT that contribute to the occurrence of complications.

METHOD

This is an exploratory study conducted in the medical unit, with a capacity of 43 beds, in a teaching hospital located in the city of Rio Branco, Acre State. Patients were included in the research from the need for PIC insertion occurred in the study period, from September 2013 to February 2014, and this period determined by staff availability involved to collect daily data on a 24-hour period. The sample consisted of adult patients who required PIC insertion in the study period, aged equal to or greater than 18 years, level of guidance preserved according to clinical assessment (temporal and spatial orientation), length of hospital stay less than 30 days and who agreed to participate in the study by signing the Informed consent form. The study excluded patients who already had a PIC inserted in other units at the time of admission to the studied unit. Thus, at the end of the data collection, a convenience sample of 122 patients was studied, emphasizing that it was decided not to include patients more than once in research.

The study met the ethical issues according to Resolution CNS No.466/2012 and was approved at the study site by the Research Ethics Committee of the Universidade Federal de São Paulo, under the Protocol No.296912.

The dependent variable was characterized as the presence of phlebitis, considered the outcome for the analysis of variables related to the patient, the IVT characteristics and related to the description of peripheral venipuncture (PVP) and use of PIC.

Phlebitis was measured from the daily clinical evaluation of PIC insertion sites, by applying the rating scale proposed by Infusion Nursing Society (INS) [11], according to the categories: Grade 0 when there are no clinical signs of phlebitis; Grade 1 if there is erythema, with or without local pain; Grade 2 if there is erythema, with local pain and or swelling; Grade 3 is characterized by the presence of erythema, local pain and/or swelling with hardening and palpable fibrous cord; Grade 4 if there is presence of pain with erythema and edema, with hardening and palpable fibrous cord greater than 2.5cm in length and purulent drainage [11]. It is noteworthy that the identification of Grade 0 (zero) of the scale was categorized as a negative measure of phlebitis variable.

The variables selected for demographic characteristics were: age, gender, self-reported skin color and the presence of predisposing condition for complications, the latter variable being measured into categories that express situations related to patient that could be characterized as predisposing to the occurrence of complications related to use of PIC, identified from the medical, nursing diagnoses and nursing evolution, such as chronic disease, vascular disease, edema, hypovolemia, obesity, infection, and others.

Regarding the variables related to IVT characteristics, we sought to describe: Time of use of IVT (variable categorized retrospectively, according to the period of use of IVT, for which it was considered the time of initiation of intravenous therapy, it could be earlier than the PIC use start studied), IVT infusion type (categorized as continuous and intermittent) IVT infusion method (bolus, gravitational and/or infusion pump) type of fluid administered (solutions and/or drugs), number of solutions, number of drugs, presence and type of current risk treatment for complications in order to identify aspects related to current IVT that could be related to the occurrence of phlebitis, such as: use of prolonged IVT (more than 14 days), use of high infusion rate (greater than 150ml/h) of vesicant drugs with extreme pH (less than four or greater than nine) and osmolarity (greater than 400 mOsm/L), or described by the manufacturer as being at risk for complications.

The following variables were selected to describe the PVP: type of catheter (on needle or needled) catheter caliber (24 gauge [G], 22G, 20G, 18G, etc.), anatomical location (hand, forearm, antecubital fossa, arm, etc.), catheter insertion site (dorsal venous arch of hand, basilic vein, cephalic vein, forearm median vein, median elbow vein, others), catheter fixation (microporous tape or tape), PVP professional performing (nurse or nursing technician) and PIC nursing care level (grade 0, grade 1 or grade 2). The level of nursing care refers to the scale proposed by Lundgren, Jorfeldt and Ek[18], describing the care provided during the insertion of PIC, as follows: Grade 0 – Satisfactory nursing care: good fixation and cleaning, and the patient did not report pain. Grade 1 – Unsatisfactory nursing care: inadequate fixation; loose or dirty and the patient reported pain. Grade 2 – Very poor nursing care: very inadequate fixation, patient reported pain and the device in situ for more than five days. It is noteworthy that the PIC insertion procedure adopted in the institution consists of skin antisepsis with 70% alcohol and the catheter fixation with hypoallergenic microporous tape or tape. The technique is, therefore, the fixation and stabilization of PIC, not performing bandage over the site of insertion into the PIC in the investigated institution. Regarding institutional protocol implemented at the study site, the PIC insertion was carried out by nurses and nursing technicians. The administration of IVT is also performed on a shared basis among the nursing team, following standardization of reconstitution, dilution, time and method of infusion of drugs and solutions advocated in the institution. In the study unit, the exchange of the PIC every 72 hours is recommended, however, it was identified that such a protocol was not consistently implemented.

The PIC insertion was considered the starting point for the follow-up and observation of the patient sample. The monitoring and follow-up time was different, as the usage time of the catheter was considered.

Data collection was performed through observation of patients with PIC, driven by a research instrument containing information relating to the measurement of the variables. The data collection instrument was previously tested. The observation of patients was performed daily, in the morning between 8:00a.m. and 12:00p.m. in the afternoon between 2:00p.m. and 6:00p.m. and in the evening between 8:00p.m. and 00:00a.m., and during the dawn between 02:00a.m. and 06:00a.m., including weekends and holidays.

The collected data were typed, a double check was performed, in a Microsoft Excel® spreadsheet 2007. Later, they were submitted to descriptive and inferential statistical analysis by using SPSS 13.0. For analysis of categorical variables, absolute and relative frequencies were calculated, median, first and third quartiles, means and standard deviations numeric variables, which are presented in tables. For categorical variables correlation analysis, we used the chi-square tests of Pearson and Fisher exact test, choosing significance levels ≤0.05.

RESULTS

A total of 122 PIC were studied, inserted in 122 patients, 50% female and 50% male, with a mean age of 46.1 (±17.6) years, ranging from 18 to 89 years old. The most often self-reported color of skin was brown (57.3%), followed by white and black. Regarding the predisposing condition for complications, the presence of chronic diseases was highlighted (60.7%), followed by infection (26.2%) (Table 1).

Table 1 – Characteristics of patients with PIC – Rio Branco, Acre, Brazil, 2014.

Variables	N	%
Age (years)		
Up to 50 years old	68	55.7
Over 50 years old	54	44.3
Median (Q1 – Q3)	47 (31-58)	
Mean	46.1	
Standard-deviation	17.6	
Minimum – Maximum	18-89	
Gender		
Female	61	50.0
Male	61	50.0
Self-reported skin color		
White	27	22.1
Brown	70	57.3
Black	18	14.9
Red	02	1.6
Yellow	05	4.1

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Variables	N	%
Predisposing condition for complications		
Yes	104	85.2
No	18	14.8
Type of predisposing condition (122)		
Infection		
Yes	32	26.2
No	90	73.8
Edema		
Yes	12	9.9
No	110	90.1
Hypovolemia		
Yes	01	0.8
No	121	99.2
Obesity		
Yes	05	4.1
No	117	95.9
Chronic disease		
Yes	74	60.7
No	48	39.3
Vascular disease		
Yes	07	5.7
No	115	94.3
Other		
Yes	10	8.2
No	112	91.8

Legend: Q1 – 1st Quartile; Q3 – 3st Quartile.

The mean time of IVT use was 8.81 (±6.89) days, and 58.2% of patients used them for up to seven days, a number that corresponds to the median of days of IVT. Regarding infusion, the majority (61.5%) had the combination of continuous and intermittent type, through bolus and gravitational infusion methods (74.6%), for administration of solutions and drugs (82.0%), one solution was predominantly used (68.0%) and more than two drugs (81.1%). It was found that out of the 122 patients studied, 80 (65.6%) had some type of treatment at risk for complications, we highlight the use of drugs with extreme pH (62.5%) and vesicant (62.5%) as well as the use of IVT for a prolonged time (42.5%) (Table 2).

Table 2 – Characteristics of intravenous therapy of patients with PIC – Rio Branco, Acre, Brazil, 2014.

Variables	N	%
Time of IVT use (days)		
Up t 7 days	71	58.2
Over 7 days	51	41.8
Median (Q1-Q3)	7 (4-11.25)	
Mean	8.81	
Standard-deviation	6.89	
Minimum-Maximum	0-32	

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Variables	N	%
IVT type of infusion		
Continuous	03	2.5
Intermitent	44	36.0
Continuous and intermitent	75	61.5
IVT infusion method		
Bolus	22	18.0
Gravitational	08	6.6
Infusion pump	01	0.8
Bolus and Gravitational	91	74.6
Type of fluid administered		
Solution	03	2.5
Drugs	19	15.5
Solutions and drugs	100	82.0
Number of solutions		
One solution	83	68.0
More than one solution	39	32.0
Number of drugs		
Up to two drugs	23	18.9
More than two drugs	99	81.1
Current treatment of risk for complications		
Yes	80	65.6
No	42	34.4
Type of current risk treatment = (80)		
Prolonged intravenous therapy		
Yes	34	42.5
No	46	57.5
Use of vesicant drugs		
Yes	50	62.5
No	30	37.5
Drugs with extreme pH		
Yes	50	62.5
No	30	37.5
Drugs with high osmolarity		
Yes	15	18.7
No	65	81.3
High rate of infusion		
Yes	26	32.5
No	54	67.5

Legend: Q1 – 1st Quartile; Q3 – 3rd Quartile.

The most used type of catheter was on needle (99.0%) and 20G caliber (39.3%), which were mainly placed on the forearm (53.3%) and the veins of the dorsal venous arch of the hand (36,9%), cephalic (25.4%), median forearm (14.7%) and basilic (13.1%). The catheters were fixed with a tape (98.4%) and nursing technicians were responsible for almost all (91.8%) of PVP. The level of nursing care was Grade 1 (73.0%), which represents nursing care judged as

inadequate. The mean time of admission of PIC was nearly three days (68.4 hours) with 80.3% remaining inserted for up to 96 hours and 19.7% for more than 96 hours (Table 3).

Table 3 – Characteristics of peripheral venous puncture of patients with PIC – Rio Branco, Acre, Brazil, 2014.

Variables	N	%
Type of catheter		
On needle	121	99.0
Needled	01	1.0
Caliber of the catheter		
24 G	17	13.9
22 G	38	31.1
20 G	48	39.3
18 G	18	14.7
Other	01	1.0
Anatomical position		
Hand	45	36.9
Forearm	65	53.3
Antecubital fossa	05	4.1
Arm	06	4.9
Others	01	0.8
Catheter insertion site		
Dorsal venous arch of hand	45	36.9
Basilic vein	16	13.1
Cephalic vein	31	25.4
Median vein of forearm	18	14.7
Median vein of elbow	08	6.6
Others	04	3.3
Fixation of the catheter		
Microporous tape	02	1.6
Adhesive tape	120	98.4
Professional performing PVP		
Nurse	10	8.2
Nurse technician	112	91.8
Nursing care level		
Grade 0	26	21.3
Grade 1	89	73.0
Grade 2	07	5.7
Length of time with the catheter (hours)		
Up to 96 hours	98	80.3
Over 96 hours	24	19.7
Median (Q1-Q3)	57 (35-89.75)	
Mean	68.4	
Standard-deviation	46.28	
Minimum-Maximum	11-283	

Legend: Q1 – 1st Quartile; Q3 – 3rd Quartile.

Phlebitis was responsible for 38 complications (31.1%), and Grade 1 had highest proportion (65.8%). It was observed that 34.2% of patients developed more severe cases of

this complication, 23.7% from Grade 2; 7.9% from Grade 3; and 2.6% from Grade 4.

Table 4 shows the presence of phlebitis associated with the use of PIC and current characteristics of IVT, with influence on complications related to catheter.

In Table 4, we present significant relationship between phlebitis and type of infusion (p=0.044), and the combined use of continuous and intermittent infusion had greater occurrence compared with phlebitis. Infection and chronic disease had a significant association with the development of phlebitis (p=0.007 and 0.005, respectively).

Table 4 – Presence of phlebitis associated with the use of peripheral intravenous catheters and characteristics of intravenous therapy with influence on complications related to PIC – Rio Branco, Acre, Brazil, 2014.

Variables	Yes N	Yes %	No N	No %	Total N	Total %	P
Time of use of IVT							0.964[a]
Up to 7 days	22	18.0	49	40.2	71	58.2	
Over 7 days	16	13.1	35	28.7	51	41.8	
Infusion type							0.044[b]
Continuous	01	0.8	02	1.7	03	2.5	
Intermitent	08	6.6	36	29.4	44	36.0	
Continuous and intermittent	29	23.8	46	37.7	75	61.5	
Infusion method							0.269[b]
Infusion pump	01	8.0	0	-	01	0.8	
Bolus	04	3.3	18	14.7	22	18.0	
Gravitational	02	1.7	06	4.9	08	6.6	
Bolus and gravitational	31	24.4	60	50.2	91	74.6	
Fluid types							0.239[b]
Solution	01	8.0	02	1.7	03	2.5	
Drugs	03	2.5	16	13.0	19	15.5	
Solution and drugs	34	27.9	66	54.1	100	82.0	
Number of drugs							0.279[a]
Up to two drugs	05	4.1	18	14.8	23	18.9	
Over two drugs	33	27.1	66	54.0	99	81.1	
Current treatment risk							0.392[a]
Yes	27	22.1	53	43.5	80	65.6	
No	11	9.0	31	25.4	42	34.4	
Nursing level of care							0.054[b]
Grade 0	04	3.3	22	18.0	26	21.3	
Grade 1	31	25.4	58	47.6	89	73.0	
Grade 2	03	2.4	04	3.3	07	5.7	
Length of hospital stay							0.796[b]
Up to 96 hours	30	24.5	68	55.7	98	80.3	
Over 96 hours	08	6.6	16	13.1	24	19.7	

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Variables	Phlebitis						P
	Yes		No		Total		
	N	%	N	%	N	%	
Infection							0.007[a]
Yes	16	13.1	16	13.2	32	26.2	
No	22	18.0	68	55.7	90	73.8	
Chronic disease							0.005[a]
Yes	16	13.1	58	47.6	74	60.7	
No	22	18.0	26	21.3	48	39.3	

[a]Chi-square test; [b]Fisher's exact test.

DISCUSSION

We found higher frequency of phlebitis 31.1%, well above the 5% ratio considered as the standard accepted by the recommendations of the INS, for both adults and children[11]. Some studies point out that the occurrence of phlebitis can be very different in each case, depending on the definition of phlebitis, method, variables and studied population, ranging from 1.7% to 55.6%[17,19]. The reasons may be related to the different frequencies described by the different sample sizes and types of study. It may also be compared to the methods used to analyze the presence of phlebitis, as well as the difficulty of standardizing the diagnosis and the severity, which implies observing and considering associated signs and symptoms. Furthermore, the inflammatory response, mainly in frail elderly, may be impaired and make the signs and symptoms subtler.

The frequency of phlebitis found in this study shows some similarity to the rates found in other studies with the adult population, between 17.6% and 24.7%[12,20], and proved to be lower than the values of 43% and 54.5% found in other studies[4,14].

The evaluation of the degree of phlebitis showed that in 2.6% of the studied sites, hardening of the vein, palpable fibrous cord and purulent drainage, as well as more advanced degree of this complication were observed. The other evaluations indicated less severe forms, especially Grade 1 (65.8%) over Grade 2 (23.7%). These findings are consistent with those obtained in other studies that also used the INS scale[11] to assess the severity of phlebitis. A study in a neurosurgical unit in the city of São Paulo, showed greater frequency of Grade 1 (50%) and Grade 2 (43.7%)[21]. Investigating occurrence of phlebitis in a medical unit of a hospital in Brasilia, researchers found that the presence of phlebitis in Grade 1 (46.2%) and Grade 2 (40%) were predominant[17].

Results of research conducted in other countries also show increased less severe phlebitis frequency. In a cohort study with 967 adult patients in Barcelona, it was observed a higher frequency of phlebitis Grade 1 (77.6%) and Grade 2 (22%). A quasi-experimental research type, held in a private hospital in Barcelona, found higher incidence of phlebitis Grade 1 (50%) and Grade 2 (35%)[3,22].

A review study conducted with a sample of 679 adults with PIC described 25 (3.7%) occurrences of phlebitis,

most were considered as Grade 1[23]. A descriptive research conducted in Turkey found 54.5% occurrences of phlebitis and Grade 1 was also the most frequently observed[14].

In this investigation, complications were more frequently in female patients, who self-reported brown skin color and who were under the age of 50 years. Among the characteristics related to the patient, none showed significant influence on the occurrence of complications associated with the use of PIC, a result that corroborates other studies in the area[14,15,24].

Regarding the characteristics of PVP, there was no significant influence of most of the variables studied, a prevalence of complications was identified in catheters inserted in the forearm (34.4%), followed by the back of the hand (23.8%) in veins of the dorsal venous arch (23.8%), cephalic vein (16.4%) and median of the forearm (10.6%), inserted by nursing staff with catheters on needle 20G, fixed with tape. A cohort study also showed no statistical relationships between anatomical location, catheter size and occurrence of phlebitis[24].

From the variables associated to IVT, there were no significant associations with the development of phlebitis, although other studies show that the administration of drugs with extremes pH and osmolarity may feature higher risk for the development of phlebitis[8,25]. Some authors claim that several drugs, such as antibiotics, phenytoin and mannitol may predispose the occurrence of phlebitis, reducing PIC time of use[14,25-26].

We identified shorter length of use of the device in patients with phlebitis, when compared to those who did not have this problem, however, there were no significant associations between phlebitis and longer PIC use. A cohort study showed a higher risk for phlebitis in patients who remained with PIC for more than 72 hours[17]. Another study revealed that the PIC use for more than 72 hours increased by up to four times the chance of developing phlebitis compared to the catheters use for less than 72 hours[4]. However, another investigation showed that there was no significant result in the development of phlebitis in patients with PIC inserted for a period greater than 96 hours when compared to those that remained with the catheter for equal to or less than 72 hours[20]. Recent studies have reported no benefits for the exchange of catheters every 72 or 96 hours when compared to the clinically indicated exchange[16,27-28]. The Centers for Disease Control and Prevention[7] suggests that PIC must not be changed more than once every 72 to 96 hours in adult patients, so this is an unresolved question about the exchange of PIC only in the presence of signs of complications, understanding that we lack evidences to refute the correlation between time of PIC use and occurrence of phlebitis.

The infusion type showed association on the occurrence of phlebitis (p=0.044); the combination of continuous and intermittent type was associated to the higher incidence of phlebitis (23.8%). Cohort study conducted with a sample of 60 patients showed that the type of intermittent infusion was the most predisposed occurrence of phlebitis associated with the PIC[21]. However, other studies have shown predominance

of continuous infusion type influencing the development of PIC complications[4,29]. The use of intermittent infusion may increase the chances of complications related to PIC, as a result of greater manipulation of the catheter[14].

It was not found statistically significant difference between the condition of the patient and the occurrence of complications (p>0.05) in this study except for the presence of chronic disease (p=0.005) and infection (p=0.007). Patients with these health conditions showed 13.1% of the phlebitis occurrences. This finding corroborates another study conducted in adults and children, in which it was found that patients with infectious diseases, burns or diabetes mellitus have up to seven times more risk of developing phlebitis[30].

It is noteworthy that this study presents phlebitis occurrence associated to PIC use, in a region of Brazil where we can find extreme weather conditions of humidity and high temperatures. The equatorial climate can be a predisposing factor for complications related to PIC use, especially by observing, more often, the loss of PIC stability by displacement of fixing materials, due to the sweating of the skin and high humidity, as well the fact that it can contribute to higher bacterial colonization. Thus, we describe again that health institutions in this region, nurses usually do not adopt the performance of sterile dressings on the PIC insertion site. They use non-sterile tape in order to keep the catheter fixed for a longer period, due to dressings maintenance difficulty with semipermeable transparent tape, which is quickly detached. This may be a factor related to the high proportion of phlebitis identified in the patients studied.

This study has limitations resulting from the convenience sample which did not allow us to reach the power of the study, which can lead to identification of risk factors for the occurrence of phlebitis. Another aspect which makes comparisons difficult refers to the use of fixation technique,

which makes difficult early identification of complications, as well as special work of nurses in performing the insertion of PIC. Despite being recommended, the implementation of aseptic technique in catheter insertion with subsequent completion of dressing over the insertion site, we identified site misconduct of aseptic technique in the study, in which the fixing use was done with contaminated tapes, reality also identified in other health institutions in the country, and that may be related to the results identified in this research. It also highlights the lack of periodic assessment protocols of insertion sites of catheters, to promote the maintenance of devices and early identification of signs of complications. It is evident, therefore, the need to apply knowledge to practice, and the development of intervention research to enable testing new nursing care to be implemented at the study site in order to change the unfavorable results, which may be related to the difficulty of maintaining dressings and fixation on the catheter insertion site for the special characteristics of humid climate of the region studied. Nevertheless, this research has the potential to contribute to advances in knowledge, by presenting ITV results, conducted in the country region that lacks research in nursing, providing grants for further studies aimed at improving the quality of nursing care, as well as the search for new forms of intervention in order to reduce the occurrence of complications and promote patient safety.

CONCLUSION

Complication was the main reason for PIC removal, phlebitis was the most frequent. Patients with systemic infection, patients with chronic diseases and those requiring continuous and intermittent infusion concomitant with the catheter had significantly higher frequency of phlebitis associated to PIC compared to those who did not have such characteristics.

RESUMO

Objetivo: Identificar a presença de flebite e os fatores que influenciam o desenvolvimento desta complicação em pacientes adultos internados em hospital da Amazônia Ocidental Brasileira. **Método:** Estudo exploratório, com amostra de 122 cateteres intravenosos periféricos instalados em 122 pacientes de uma unidade de clínica médica. Foram analisadas variáveis relacionadas ao paciente e à terapia intravenosa. Para a análise utilizaram-se os testes de Qui-quadrado de Pearson e Exato de Fisher, com nível de significância de 5%. **Resultados:** A complicação foi o principal motivo da retirada do cateter (67,2%), e a flebite a complicação mais frequente (31,1%). O tempo médio de uso de terapia intravenosa foi de 8,81 dias, em infusão contínua e intermitente (61,5%), em cateter calibre 20G (39,3%), inseridos nas veias do arco dorsal da mão (36,9%), com média de tempo de permanência de 68,4 horas. O tipo de infusão (p=0,044) e a presença de doença crônica (p=0,005) e de infecção (p=0,007) influenciaram o desenvolvimento de flebite. **Conclusão:** Houve alta frequência de flebite na amostra estudada, sendo influenciada pelo emprego concomitante de infusão contínua e intermitente de fármacos e soluções, e mais frequente em pacientes com doenças crônicas e infecção.

DESCRITORES

Flebite; Cateterismo Periférico; Infusões Intravenosas; Pacientes Internados; Cuidados de Enfermagem.

RESUMEN

Objetivo: Identificar la presencia de flebitis y los factores que influencian el desarrollo de esta complicación en pacientes adultos ingresados en hospital de la Amazonía Occidental Brasileña. **Método:** Estudio exploratorio, con muestra de 122 catéteres intravenosos periféricos instalados en 122 pacientes de una unidad de clínica médica. Fueron analizadas variables relacionadas con el paciente y la terapia intravenosa. Para el análisis se utilizaron las pruebas de Chi cuadrado de Pearson y Exacta de Fisher, con nivel de significación del 5%. **Resultados:** La complicación fue el principal motivo de la retirada del catéter (67,2%), y la flebitis la complicación más frecuente (31,1%). El tiempo medio de uso de terapia intravenosa fue de 8,81 días, en infusión continua e intermitente (61,5%), en catéter calibre 20G (39,3%), insertados en las venas del arco dorsal de la mano (36,9%), con promedio de tiempo de permanencia de 68,4 horas. El tipo de infusión (p=0,044) y la presencia de enfermedad crónica (p=0,005) y de infección (p=0,007) influenciaron el desarrollo de flebitis.

Conclusión: Hubo alta frecuencia de flebitis en la muestra estudiada, siendo influenciada por el empleo concomitante de infusión continua e intermitente de fármacos y soluciones, y más frecuente en pacientes con enfermedades crónicas e infección.

DESCRIPTORES

Flebitis; Cateterismo Periférico; Infusiones Intravenosas; Pacientes Internos; Atención de Enfermería.

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