Journal of Nursing
Revista de Enfermagem
UFPE On Line
ISSN: 1981-8963

ORIGINAL ARTICLE

INCIDENCE OF PHLEBITIS IN ADULT PATIENTS

INCIDÊNCIA DE FLEBITES EM PACIENTES ADULTOS

INCIDENCIA DE FLEBITIS EN PACIENTES ADULTOS

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ABSTRACT

Objective: to verify the incidence of phlebitis in adult patients associated with sociodemographic characteristics, hospitalization and venous puncture. ***Method:*** quantitative, descriptive, retrospective study performed at a sentinel hospital, reporting adverse events in the electronic medical record, totaling 176. The mean and standard deviation for the quantitative variables were calculated. The incidence of phlebitis was calculated using absolute numbers and percentage. Opinion 1,050,829. ***Results:*** the mean incidence of phlebitis was 14.66 at 12 months. The majority of the patients were men aged between 61 and 80 years, white, married, with incomplete elementary school, retired, Catholic, of the Unified Health System, with hospitalization <15 days and peripheral venous puncture with time <72h of insertion. Most nurses did not specify the prescribed drug. ***Conclusion:*** phlebitis occurred in patients with time of hospitalization <15 days and venous puncture <72h. Most of the drugs were not specified but, when described, it was irritating. The procedure was to remove and replace the puncture and the patients were discharged. This study demonstrated the need for correct notification of phlebitis by nurses in order to assess risks to improve patient safety. ***Descritores*:** Notification; Phlebitis; Patient; Nursing: Hospitals, Teaching; Nursing Care.

RESUMO

***Objetivo*:** verificar a incidência de flebites em pacientes adultos associando com característica sociodemográfica, internação hospitalar e punção venosa. ***Método*:** estudo quantitativo, descritivo, retrospectivo, realizado em um hospital da rede sentinela, por meio da notificação de eventos adversos no prontuário eletrônico, totalizando 176. Foram calculados a média e o desvio padrão para as variáveis quantitativas. A incidência de flebites foi calculada usando-se números absolutos e porcentagem. Parecer 1.050.829. ***Resultados*:** a incidência média de flebite foi 14,66 em 12 meses. A maioria dos pacientes era de homens, entre 61 e 80 anos, branca, casada, com ensino fundamental incompleto, aposentada, católica, do Sistema Único de Saúde, com internação <15 dias e punção venosa periférica com tempo <72h de inserção. A maioria dos enfermeiros não especificou a droga prescrita. ***Conclusão*:** a flebite ocorreu em pacientes com tempo de internação <15 dias e punção venosa <72h. A maioria das drogas não foi especificada, mas, quando descrita, era irritante. A conduta foi a retirada e a troca da punção e os pacientes receberam alta hospitalar. Este estudo demonstrou a necessidade da notificação correta de flebite pelos enfermeiros a fim de avaliar os riscos para melhorar a segurança do paciente. ***Descritores*:** Notificação; Flebite; Paciente; Enfermagem; Hospital de Ensino; Assistência de Enfermagem.

RESUMEN

Objetivo: verificar la incidencia de flebitis en pacientes adultos asociando con característica sociodemográfica, internación hospitalaria y punción venosa. ***Método:*** estudio cuantitativo, descriptivo, retrospectivo, realizado en un hospital de la red centinela, por medio de la notificación de eventos adversos en el prontuario electrónico, totalizando 176. Se calcularon la media y la desviación estándar para las variables cuantitativas. La incidencia de flebitis fue calculada, usando números absolutos y porcentaje. Dictamen 1.050.829. ***Resultados:*** la incidencia media de flebitis fue 14,66 en 12 meses. La mayoría de los pacientes eran hombres, entre 61 y 80 años, blancas, casadas, con enseñanza fundamental incompleta, jubilada, católica, del Sistema Único de Salud, con internación <15 días y punción venosa periférica con tiempo <72h de inserción. La mayoría de las enfermeras no especificó la droga prescrita. ***Conclusión:*** la flebitis ocurrió en pacientes con tiempo de internación <15 días y punción venosa <72h. La mayoría de las drogas no fueron especificadas, pero cuando se describían eran irritantes. La conducta fue retirada y el intercambio de la punción y los pacientes recibieron alta hospitalaria. Este estudio demostró la necesidad de la notificación correcta de flebitis por los enfermeros, a fin de evaluar los riesgos para mejorar la seguridad del paciente. ***Descritores*:** Notificación; Flebitis; Paciente; Enfermería; Hospitales de Enseñanza; Atención de Enfermería.

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INTRODUCTION

Intravenous therapy (IVT) is one of the common behaviors in inpatients in hospital units both to alleviate and eliminate symptoms, as well as for research or treatment of the disease. It consists of the introduction of a needle-bridge object into a vein and this procedure requires Nursing care and attention, from maintenance to disposal, as it is related to events such as hematoma, edema, hyperemia, local pain and phlebitis.[1] Complications of IVT include catheter occlusions, accidental removals, fear of the patient from sharp catheters (needle phobia), and pain. The most serious problems are infection, extravasation, skin lesions and phlebitis.[2]

In the hospital, phlebitis is assessed as one of the major adverse events of IVT.[3] Its origin may be mechanical, chemical or bacterial.[4] According to the Infusion Nurses Society (INS) [5], the acceptable phlebitis index in hospital institutions is 5 % or less. However, researchers have identified differences in the incidence rate, ranging from 2.3% to 6.7% .[6] Mechanical origin is most commonly observed from 48 to 72 hours after insertion and occurs when the movement of the cannula within the vein causes friction, leading to subsequent inflammation.[7]

Regarding the time period with the inserted venous catheter, a Probability Ratio (OR) of 1.010 for periods greater than 72 hours (p <0.001) was identified in the study. [8] A catheter inserted for less than 48 hours and 49 to 96 hours had a positive risk of phlebitis of 5.8 (p = 0.000) and 2.8 (p = 0.002), respectively, when compared to the period 97-120 hours.[9]

Patient-free care is a goal to be achieved by all health professionals and the commitment of the professional training itself. As the Nursing team is at the forefront of care, it is more susceptible to errors, requiring nurses to adopt preventive behaviors and good care practices, as well as immediate decision-making when an event occurs in order to correct the problem.[6]

Patient safety involves assisting the person, individually or collectively, within a system that provides protection against the adverse event.[10] It occurs unintentionally and results in temporary or permanent disability and / or increased permanence or death of the individual as a consequence of care.[11] The failures caused by the care have a negative impact on the state of health, due to the fact of prolonging the period of hospitalization and, consequently, increase the hospital expenses.[12] Although it is bad for the institution, the greater harm is to the patient and family.[13]

The adverse event is not caused solely by the human factor, but due to issues related to the inadequate use of equipment, overload of the professional's work or to the patient's own clinical condition.[11] The Nursing team is increasingly involved with this problem, developing actions to promote greater safety.[14] The use of instruments for the reporting of adverse events by institutions contributes to improved care by assisting in the development of effective preventive measures.[15]

High complexity patients require, the professionals involved, the logical thinking of clinical status, and fast and effective decision making.[16] Nurses must diagnose and plan care, contributing to the team's commitment to care protocols that directly interfere in the reduction of cases of adverse events.[17] To minimize adverse events with peripheral IVT, it is necessary for the Nursing team to understand the risk factors and perform the care according to the scientific evidences and managed protocols.[10]

OBJECTIVE

- To verify the incidence of phlebitis in adult patients associating with sociodemographic characteristics, hospitalization and venous puncture.

METHOD

Quantitative, descriptive, retrospective study, performed at a hospital in northwest São Paulo, with 700 beds. It is a tertiary-level institution, accredited for high-complexity patient care, which serves 85% of the Unified Health System (UHS), provides supplementary and private health services and is distinguished by teaching and research activities. It belongs to the ANVISA Sentinel Hospitals Network, whose purpose is to manage adverse events and technical complaints related to health products, through risk management.

Inclusion criteria were all adult patients who had phlebitis during the hospitalization period, in all hospital units, notified by nurses through care protocols, managed in the specific computerized Nursing system, in the period of September 2014 to August 2015.

Exclusion criteria were notifications from other institutions linked to the study hospital, such as the Children and Maternity Hospital, and chemotherapy patients, which are monitored separately for their

characteristics, presence of incomplete data in the computerized system and duplicate notifications, being excluded 55.

Data collection was done through an adverse event notification form completed by nurses, through the computerized system, during the 12-month period. The records contained the identification of the notifier (name, profession, work unit and date of registration of the notification), date of event, patient identification (room, bed, hospitalization unit, name and medical record), type of event, description of the lesion and Nursing course. It is important to note that, in some cases, more than one incident occurred with the same patient at different periods.

In the electronic medical record of the patient, additional information was also searched, such as age, race, schooling, marital status, origin, profession, religion, covenant, number of days of hospitalization, medical diagnosis according to the international classification of diseases). Group 1: Diseases of the Circulatory, Respiratory, Digestive and Genitourinary systems. Group 2: Infectious and Parasitic Diseases and Neoplasias. Group 3: Abnormal findings of laboratory tests, external causes or consequences and factors influencing health status. Group 4: Other (diseases of the nervous system, blood diseases, diseases of the endocrine system, mental disorders, diseases of the eye and annexes, musculoskeletal and connective tissue diseases, gestation, childbirth and puerperium); number of days of stay in the teaching hospital; number of days of puncture; use of annoying medication and type of medication used.

The incidence of phlebitis was calculated using absolute numbers and percentage. Sociodemographic data, such as sex, age, race, marital status, education, profession, religion and origin, were expressed as absolute numbers, percentage, mean and standard deviation. The type of hospitalization, medical diagnosis, time and outcome of hospitalization were also computed. Numbers of days of puncture, administration of irritating medication, medication types and Nursing conduct were expressed in absolute numbers and percentage.

The data was stored in a database in Microsoft Office Excel® 2013, analyzed descriptively in absolute and relative frequencies and presented in tables. The presence of an inflammatory process in the vein wall, usually associated with pain, erythema, hardening of the vessel or the presence of a fibrous cord, was considered phlebitis. The incidence was calculated by the ratio between the number of cases of phlebitis in one year, divided by the number of cases of each month. The mean and standard deviation for the quantitative variables (age, length of hospital stay and number of days of puncture) were calculated. The study followed the norms of the National Health Council - Resolution 466/12. Opinion No. 1,050,829. CAAAE 43267015.7.0000.5415.

RESULTS

From a total of 176 reports of phlebitis, the reported indices according to the month are presented in Table 1. A higher index is observed in the months of May, June and July.

Table 1. Incidence of phlebitis. Sao Jose do Rio Preto. São Paulo (SP), Brazil, 2017.

Month/Year	n	%
September/2014	11	6.25
October 2014	02	1.13
November / 2014	12	6.81
December 2014	17	9.66
January 2015	13	7.39
February / 2015	05	2.84
March / 2015	16	9.09
April / 2015	09	5.11
May / 2015	24	13.63
June / 2015	25	14.20
July / 2015	26	14.80
August 2015	16	9.09
TOTAL	**176**	**100**

The sociodemographic characterization and the data related to the period of hospitalization are presented in tables 2 and 3, respectively.

Table 2. Socio-demographic characterization. Sao Jose do Rio Preto. São Paulo (SP), Brazil, 2017.

Sociodemographic Data	N	%
SEX		
Male	124	70.45
Female	52	29.55
AGE GROUP	Média: 54.19/DP: 19.47	
18 to 40 years	41	23.29
41 to 60 years	58	32.95
61 to 80 years	63	35.79
> 80 years	14	7.97
BREED		
White	149	84.65
Black	11	6.25
Brown	09	5.11
No information	07	3.99
MARITAL STATUS		
Married / Stable Union	99	56.25
Not married	45	25.56
Separated / Recalled	17	9.65
Widower	15	8.54
SCHOOLING		
To Incomplete Elementary School	99	56.25
Until Completed Elementary School	11	6.25
Incomplete	06	3.40
Incomplete	23	13.06
Incomplete university education	06	3.40
Up to Full Higher Education	07	4.00
Up to Specialization	-	-
Not Alphabetized	15	8.52
Uninformed	09	5.12
PROFESSION		
Retirement / Pensioners	41	23.29
Self Employed	04	2.23
From Home	24	13.70
Student	13	7.38
No information	19	10.79
Others	75	42.61
RELIGION		
Catholic	120	68.18
Evangelical / Pentecostal	36	20.45
Others	07	3.97
None / Not Informed	13	7.40
PROCEDENCIA		
Sao Jose do Rio Preto	67	38.10
São José do Rio Preto Region	105	59.66
London Greater London	01	0.57
Another state	02	1.10
Another country	01	0.57
TOTAL	176	100

Table 3. Characterization of hospitalization. Sao Jose do Rio Preto. São Paulo (SP), Brazil, 2017.

Hospitalization	N	%
UHS	160	90.90
Complementary Health	16	9.10
Medical diagnostic		
Group 1*	58	32.90
Group 2 **	21	11.90
Group 3 ***	06	3.40
Group 4 ****	91	51.80
Length of stay	**Average: 22,30±19,95**	
Up to 07 days	42	23.86
From 8 to 15 days	52	29.54
From 16 to 30 days	50	28.40
> 30 days	32	18.80
Outcome of Hospitalization		
Discharge	159	90.35
Death	17	9.65
TOTAL	176	100

* Diseases of the Circulatory, Respiratory, Digestive and Genitourinary systems / ** Infectious and Parasitic Diseases and Neoplasias./ *** Abnormal findings of laboratory tests, external causes or consequences and factors influencing health status. Other (diseases of the nervous system, blood diseases, diseases of the endocrine system, mental disorders, diseases of the eye and annexes, musculoskeletal and connective tissue diseases, gestation, childbirth and puerperium).

The data referring to the characterization of the reported incident, the cause of phlebitis and the Nursing course are shown in table 4.

Table 4. Data related to incident characterization. Sao Jose do Rio Preto. São Paulo (SP), Brazil, 2017.

Incident	n	%
No. of Days of Puncture	Average: 5,34±7,23	
Uninformed	-	-
<72 hours	172	97.72
> 72 hours	04	2.28
Use of Irritant Medication	98	55.68
Yes		
Uninformed	78	44.32
Type of medication		
Antibiotic	08	4.55
Vasoactive	09	5.11
Sedation	03	1.70
Not Specified / Reported	144	81.82
Others	12	6.82
Nursing Conduct		
Removal / replacement of puncture and on-site care	86	48.86
On-site care	30	17.04
Withdrawal / Replacement of puncture	24	13.65
Uninformed	36	20.45
Total	176	100

DISCUSSION

The number of phlebitis presented an average of 14.66 cases in a year, with notifications in all months. The highest number was 26 events (14.8%), in July 2015, followed by June, with 25 (14.2%), and May of that same year, with 24 (13.63%) occurrences. The incidence of phlebitis accepted by the

Nursing Indicators Manual (NAGEH) of the Hospital Quality Commission (CQH) is 22 events / month.[18] A possible justification for this increase involved the coronary unit, especially as a result of prescribed vesicant medication and administered in peripheral venous access.

In one year, the phlebitis index, in nine months, was within the recommended range, and in three, it was not in compliance with the CQH. A study that evaluated 361 peripheral venous accesses in patients receiving irritating intravenous medications reported a phlebitis index of 2.63%, lower than that found in this study.[6] The risks and consequences that the adverse event can generate, in addition of the clinical signs, are the use of antibiotics, the surgical approach, the increase of the period of hospitalization, greater spending on treatment, longer working time of the professionals, frustration and suffering to the family and the patient.[19-22]

Regarding the characterization of patients, the majority were white (149 - 84.65%), married (99 - 56.25%), with incomplete elementary school (99 - 56.25%), retired (41-23, 29%), of Catholic religion (120 - 68.18%) and of cities that cover the region of São José do Rio Preto (105-59.66%). Regarding the length of stay in the units, up to 15 days (94 - 53.4%), 16-30 (50-28.4%) and over 30 days (32-18.8%). The majority remained for an extended period: over 72 hours. However, 159 (90.35%) were discharged from the hospital and 17 (9.65%) had, as a clinical outcome, death.

Of the 176 patients with phlebitis, 124 (70.45%) were males, which corroborates other studies.[21,23-4] The mean age was 54.19 years, with a standard deviation 19,47. In relation to the age group, 63 (35.79%) were between 61 and 80 years old and 32.85%, between 41 and 60 years old; results were congruent with a study performed in a medical clinic, with 100 notifications, where the majority of patients were older than 60 years.[23]

Regarding the hospitalization characteristics, 160 (90.9%) were from the UHS System, due to the fact that the hospital was a reference for medical treatment, covering 102 municipalities of the Regional Health Board of São José do Rio Preto and other States. Phlebitis occurred in patients hospitalized in several units of the institution, from the prompt care, clinical and surgical wards to intensive care units.

The medical diagnosis of the patients was divided into four groups - Group 1, Group 2, Group 3 and Group 4 - related to Cardiovascular Diseases, Injuries, Septicemias and several, respectively; 58 (32.9%) were related to Cardiovascular Diseases; 21 (11.9%), to Traumatisms; to septicemia and 91 (51.8%), to several other diseases (neoplasms, cirrhosis, human immunodeficiency virus, among others), which corroborates a study of 2017 that reported a diagnosis of cardiac disease as the most prevalent (43.8%).

The average length of hospital stay was 22.30 days. The puncture time, of up to 72 hours, occurred in 172 cases (97.72%). A study of phlebitis showed an incidence rate of 31.4%, with a device remaining longer than 72 hours (55.9%), puncture site in the forearm (50.0%), antibiotic use (54, 4%) and Nursing care grade considered to be unsatisfactory (72.7%).[25] The rate found in this study corroborated findings from a study performed in a hospital in the State of São Paulo.[21] However, it diverged from a study conducted in Brasilia, which found 63, 8% of phlebitis with venous catheter insertion time over 72 hours.[12]

In relation to the use of irritating medications, which increase the risk for phlebitis, there was an index of 98 (55.68%) cases of patients who were using this type of medication, however, in 78 (44.32%) situations the types of drugs were not reported. Of the drugs described, eight (4.55%) were antibiotics; nine (5.11%), vasoactive drugs; three (1.7%), sedatives; 12 (6.82%), others (anticonvulsants, antiemetics, anti-inflammatories) and 144 reports (81.82%) without reports and / or specificities

The data of this study diverged from findings in a study conducted in the state of Paraíba, in which the use of vasoactive and sedative medications was not evaluated. However, antibiotics were equivalent to 25%, antiemetics and anticonvulsants, at 16.7%, and there were no reports of phlebitis without the drugs being described and specified.[24]

Regarding the Nursing behavior described in the phlebitis notification, 86 (48.86%) reported that patients had the punctures removed, changed and received care at the site of inflammation; 30 (17.04%) were cared for locally; 24 (13.65%) had the puncture removed, with a new puncture in another venous access, and in 36 (20.45%) cases, the behaviors adopted by the nurse and the Nursing team.

The prevention of phlebitis is related to the correct techniques performed by the professionals during the intravenous procedures: the permanence of a same catheter, observing the necessity of exchange

every 72 hours; the number of punctures, which interferes negatively; the correct asepsis of the skin with alcohol decreases the risk and the maintenance is as important as the insertion itself. Therefore, keeping the dressing clean and identified, using micropore, observing fluency and integrity, and avoiding unsafe venous access are safe practices that must be followed by the Nursing team.[12,21,26]

One study found that the highest frequency of adverse events occurred in an intensive care unit and 85% were related to the patients themselves.[26] A survey that evaluated 221 peripheral venous accesses identified 42 phlebitis, relating this event to the anatomical structure, and in the veins of the hand's back, there was a higher incidence, with 52.5%, and in the median cubital region, the lowest, with 4.9%. The caliber of the needle used in the procedure was related to phlebitis, as there was a higher incidence with catheters of greater lumen.[21]

The phlebitis notification is necessary to quantify the occurrences and to carry out a posterior analysis of the problem by the hospital nurses and the hospital risk management team.

CONCLUSION

In one year, the occurrence of phlebitis was below that recommended in nine months, and in three, it was above the value recommended by the CQH, with a mean incidence of 14.66. Regarding the characterization of the patients, the majority were male, aged between 61 and 80 years, white, married, with incomplete elementary school, retired, Catholic, from the region of São José do Rio Preto, with agreement by the Single Health System , with period of hospitalization less than 15 days and venous puncture with time less than 72 hours of insertion.

As for the drug infused, the annotations were not fully specified by the nurses. When described, most patients were receiving irritating medications. The Nursing course was the withdrawal, the venous puncture was replaced and the outcome was hospital discharge. This study demonstrated the need for correct notification of phlebitis by nurses in order to assess risks to improve patient safety.

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Submission: 2017/11/19
Accepted: 2018/01/13
Publishing: 2018/03/01

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