

111 - CHARACTERIZATION OF ACCIDENTS WITH BIOLOGICAL MATERIAL IN A PUBLIC HOSPITAL IN PARANÁ

DAIANA TAIS RHEINHEIMER DOS SANTOS
 MARISTELA SALETE MARASCHIN
 ELIZABETH APARECIDA DE SOUZA
 NELSI SALETE TONINI
 ANÁLIA FIORINI OGURA

UNIOESTE – Universidade Estadual do Oeste do Paraná. Cascavel/Pr, Brasil
 UNIPAR - Universidade Paranaense. Cascavel/PR, Brasil

doi:10.16887/89.a1.111

INTRODUCTION

An accident with biological material is the accidental incident in which a person is exposed to blood or secretions in contact with the skin, mucosa or lesions caused by piercing objects like needles, scalpels, glass shards or surgical instruments. These fluids and secretions may be contaminated with potentially dangerous viruses such as the hepatitis B virus, the hepatitis C virus, or the HIV (Human Immunodeficiency Virus) (BRASIL, 2005).

Occurrences of accidents with biological material are considered emergencies because the treatment to prevent seroconversion will be faster and better the sooner the contents of the contaminant are identified (SANTOS; MONTEIRO; RUIZ, 2002). The consequences of an occupational exposure to bloodborne pathogens go beyond short or long-term physical compromise and may affect other aspects of the professional's health (MARZIALE, et. al, 2007).

Healthcare professionals involved in the dynamics of patient care, specially nurses, with work focused in task execution, find themselves more susceptible to this kind of accident. However, other professionals such as garbage collectors, military policemen, firefighters, janitors and ambulance drivers, have been victims of accidents with exposure to biological material, and, consequentially, generated case notifications and conduct (BRANDÃO JÚNIOR, 2000).

In the west of the state of Paraná, in the city of Cascavel, the University Hospital of Western Paraná/HUOP (Hospital Universitário do Oeste do Paraná) is one of the primary centers referring to accidents with biological material, following a flowchart to approach the injured professional. Receiving work accident notifications (reports) from both public and private institutions and providing medical monitoring while the treatment is still ongoing.

Considering the information exposed, this research has as objective to understand the profile of the professional who suffered an accident with biological material and was attended to in the University Hospital of Western Paraná in the period between January and December 2014, relate the most affected professions, the most occurring type of accident with biological material locally and the workplace, and identify the period of highest incidence.

METHODS

This study is a quantitative, retrospective documentary analysis. Patient data was collected from notification files archived in the Epidemiologic Hospital Surveillance Center (Núcleo de Vigilância Epidemiológica Hospitalar/NVEH), selecting the data from all cases of accidents with biological material in Cascavel/PR, in the period between January and December 2014. 296 cases were confirmed in the selected period.

A formulary was elaborated to collect the data. The data acquisition happened in August, 2015, after approval from the Research Ethics Committee (Comitê de Ética em Pesquisa), according to report number 1.172.278, and CAAE 47081515.0.0000.0109, emitted by Paranaense University (Universidade Paranaense/UNIPAR). In conformity with guidelines from resolution 466, 2012 (BRASIL, 2012).

Data was analyzed quantitatively, based on proper theoretical grounds, as well as the elaboration of tables, absolute reasoning and simple percentage.

RESULTS AND DISCUSSION

The age distribution of Biological material-related accidents had a 17-year-old as its youngest patient, and a 66-year-old as its oldest. The largest incidence of accidents with biological material happened in the 22 to 26 years-old age group, with 56 notified cases, followed by the 27 to 31 years-old age group, with 55 notified cases, and in third was the 32 to 36 years-old age group, with 43 notified cases. In the age groups with higher accident incidence, the workers find themselves in a more productive age, and are more willing to perform their jobs, because of this, these workers are more frequently exposed to accidents in their workplace, since they are daily exposed to micro-organisms and bodily fluids.

Table I- Age of the patients in notified cases of accidents with biological material in the period between January and December, 2014, in the University Hospital of Western Paraná (HUOP), Cascavel/PR.

AGE (YEARS)	NUMBER OF CASES	%
17- 21	26	8,78%
22- 26	56	18,91%
27- 31	55	18,58%
32- 36	43	14,62%
37- 41	41	13,85%
42- 46	27	9,12%
47- 51	15	5,06%
52- 56	10	3,37%
57- 61	02	0,67%
62- 66	01//	0,33%
TOTAL	296	100%

Source: Biological material-related accident notification files.

The 22 to 26 years-old age group may be related to the development of practical skills, given that it is possible to improve dexterity and technical skill as the worker acquires practical experience.

A predominance of contaminations involving females over males was also verified. It is known that the number of female professionals in healthcare is higher than the number of males in the same area. From the total notified cases, 52 (17,56%) were

men, and 244 (82,43%) were women, three of them were pregnant. The Ministry of Health (Ministério da Saúde) developed protocols for this kind of situation, which explain the appropriate measures that should be taken by the institution and by the pregnant patient.

The higher number of female professionals in hospitals is confirmed in literature because of the large proportion of female nurses, one of the populations of professionals exposed to biological material-related work accidents. (MARZIALE, et, al, 2007).

Table II- Distribution of cases regarding the professional category of the patients that experienced an accident with biological material, from January to December 2014, in the University Hospital of Western Paraná (HUOP), Cascavel/PR.

PROFESSIONAL CATEGORY	NUMBER OF CASES	%
NURSING TECHNICIANS	142	47,97%
JANITORS	26	8,81%
STUDENTS	22	7,43%
NURSES	22	7,43%
DOCTORS	06	2,02%
DENTISTS	11	3,71%
OTHERS	41	13,85%
IGNORED	26	8,78%
TOTAL	296	100%

Source: Biological material-related accident notification files.

All nursing professionals, specially nursing technicians, are more vulnerable to the risk of accidents during their work. A study realized in a school hospital has shown that 62,9% of accidents occurred with nursing technicians. This professional category is more exposed to the risk as a result of frequent and direct contact with the patients, as well as the large number of professionals (GOMES, et. al, 2009). Our study found the same result, with nursing technicians being involved in 142 (47,97%) of the total accidents.

Table III: Procedures in which the accidents with biological material occurred, in the period between January to December 2014, in the University Hospital of Western Paraná (HUOP), Cascavel/PR.

CONTAMINATION SOURCE	# OF CASES	%
SURGICAL PROCEDURE	09	3,04%
LABORATORIAL PROCEDURE	12	4,05%
BLOOD GLUCOSE TEST	02	0,67%
NEEDLE RECAPPING	22	7,43%
INTRAVENOUS MEDICATION ADMINISTRATION	34	11,48%
INTRAMUSCULAR MEDICATION ADMINISTRATION	06	2,02%
SUBCUTANEOUS MEDICATION ADMINISTRATION	15	5,06%
INTRADERMIC MEDICATION ADMINISTRATION	02	0,67%
VENOUS PUNCTION	05	1,68%
VENOUS PUNCTION/ NOT SPECIFIED	09	3,04%
INAPPROPRIATE DISPOSAL/ TRASH BAGS	24	8,17%
INAPPROPRIATE DISPOSAL/ BED OR COUNTER	23	7,77%
MATERIAL CLEANING	09	3,04%
PIERCING OBJECT DISPOSAL BOX	09	3,04%
OTHERS	59	19,93%
IGNORED	56	18,91%
TOTAL	296	100%

Source: Biological material-related accident notification files.

Table III organizes the procedures in which the accidents with biological material occurred, the "others" category had the most accidents, with 59 cases (19,93%), including exposure to urine, tracheal and ocular secretion, serum and plasma, in second was the "ignored" category, with 56 cases (18,91%), the procedures of intravenous medication administration were responsible for 34 cases (11,48%) and the inappropriate disposal of trash bags was the contamination source ranked fourth, with 24 notified cases (8,17%).

The occurrence of biological material-related work accidents is also related to the inappropriate disposal of contaminated material, as in overloaded containers, the transport and handling of exposed needles, administration of medication without the required protective equipment, the removal of the needle from the syringe, as well as the recapping of contaminated needles. The containers used to the disposal of piercing material aren't always adequate for that purpose, being sometimes replaced by adaptations of other containers, such as medication boxes and cleaning product packages (NISHIDE; BENATTI; ALEXANDRE; 2004).

Table IV: Month in which the accident with biological material occurred, in the period between January to December 2014, in the University Hospital of Western Paraná (HUOP). Cascavel/PR.

MONTH	# OF CASES	%
JANUARY	14	4,72%
FEBRUARY	14	4,72%
MARCH	22	7,43%
APRIL	18	6,10%
MAY	39	13,17%
JUNE	19	6,41%
JULY	28	9,45%
AUGUST	32	10,81%
SEPTEMBER	26	8,81%
OCTOBER	21	7,10%
NOVEMBER	42	14,18%
DECEMBER	21	7,10%
TOTAL	296	100%

Source: Biological material-related accident notification files.

The months of highest incidence of accidents with biological material from the total of analyzed cases were May, August and November. We believe that in those months, workers may have entered their vacation period, requested health or maternity leave and also a lack of personnel occurred.

Regarding the origin cities of the professional who suffered an accident with biological material, the largest percentage of contaminations was in the city of Cascavel/PR, with 203 notified cases (68,30%), these numbers may be higher because of the following facts: the main hospitals are concentrated in that city, which are large cancer-treatment centers and specialized clinics. Ignored cases were equal to 67 notifications (22,64%). The cities of Corbélia and Nova Aurora had four notified cases (1,39%) each. Santa Tereza and Vera Cruz had two notified cases (0,67%) each and the other cities, including: Iguatu, Boa Vista da Aparecida, Três Barras do Paraná, Cafelândia, Jesuítas, Capitão Leônidas Marques, Medianeira, Quedas do Iguaçu, Braganey, Céu Azul, Santa Lúcia and Guaraniaçu had one notified case (1,33%) each

From the total 296 notified cases, only 189 professionals (63,85%) had completed the hepatitis B vaccination schedule, two professionals (0,67%) had only one dose of the vaccine, nine professionals (3,04%) were not vaccinated and 96 professionals (32,44%) ignored the question, the last ones being the most susceptible to seroconversion, because we don't have any information about the type of exposure, the volume of fluids which the professional was exposed and the patient from which the professional was contaminated (BRASIL, 2015).

Pre-exposure vaccination is the main preventive measure of occupational hepatitis B on healthcare professionals. Ideally, the vaccine must be administered prior to the admission of the professional (or student) in the workplace. Vaccination is indicated for all those who may be exposed to biological material during their work, including those who do not work directly in healthcare (BRASIL, 2005).

If the professional is not yet immunized for hepatitis B, immunoglobulin against the hepatitis B virus may be administered, providing a temporary immunity of 3 to 6 months of duration, because it is composed of high quantities of Anti-HBs (a serological marker, which indicates immunity for hepatitis B), showing effectiveness in its administration in 24 to 48 hours (BRASIL, 2015).

From the total of the analyzed samples, prophylaxis was indicated in 114 (38,53%) cases, other measures taken in 21 (7,09%) cases, no prophylaxis administered in five (1,69%) cases, prophylaxis was not indicated in 87 (29,39%) cases and the question was ignored in 69 (23,31%) cases. Post-exposure prophylaxis is an important ally, but it is not a guaranteed success, as it may not be effective in some cases.

Table V: Institution in which the accident with biological material occurred, in the period between January to December 2014, in the University Hospital of Western Paraná (HUOP). Cascavel/PR.

INSTITUTION	NUMBER OF CASES	%
EMERGENCY CARE UNIT (UPA)	09	3,04%
PAID	03	1,01%
UNITOM	03	1,01%
HUOP	40	13,51%
GENÉSI HOSPITAL	05	1,68%
CEONC	07	2,36%
GASTROCLINICA	03	1,01%
OPHTHALMOLOGICAL HOSPITALS	03	1,01%
POLICLINICA	12	4,08%
DR. LIMA HOSPITAL	05	1,68%
SÃO LUCAS HOSPITAL	12	4,05%
SALETE HOSPITAL	04	1,35%
UOPPECAN	25	8,44%
CLINICAL ANALYSIS LABORATORY	28	9,45%
OTHERS	35	11,84%
HOSPITALS AND PRIMARY HEALTHCARE FROM NEIGHBORING CITIES	34	11,51%
IGNORED	68	22,97%
TOTAL	296	100%

Source: Biological material-related accident notification files.

The University Hospital of Western Paraná/HUOP had the highest incidence of accidents with biological material, with a large staff, it is expected that the number of contaminations would be higher than other institutions in Cascavel and from other cities.

From the total number of notifications registered by the institutions, 22,97% (40 cases) did not inform the origin of the accident, with that question being ignored in the formulary.

Referring to the biological material-related accident's causal object/agent, the highest incidence happened with hollow needles, with 142 registered cases (47,97%). Hollow needles allow the blood to flow through its lumen, such as the abbocath, the scalp vein set, and simple needles, with different calibers, the lower its number, the larger its caliber, allowing a better blood flow inside the device (GOMES, et. al, 2009). In the "others" option were the cases in which the object in question was not specified, representing 66 cases which are equivalent to 22,29% of the total notified cases.

CONCLUSIONS

Based on the results obtained, the accidents with biological material were characterized this way: professionals aged 22 to 41 years old were the ones involved more often, most of them were nursing technicians, female, vaccinated against the hepatitis B virus and were residents of Cascavel/PR, the most common procedure in which the exposure happened was intravenous administration.

We emphasize the importance of identifying the most prevalent accidents in healthcare professionals, using the information acquired to design strategies aiming for the improvement of the conditions that influence the growing incidence of workplace accidents. The availability and incentive to the use of personal protective equipment, as well as the establishment of educational campaigns, may help to change the worker's habits and minimize the occupational accidents

REFERENCES

- BRAZIL. Ministry of Health. Health Surveillance Office. Department of Epidemiological Surveillance. Viral Hepatitis: Brazil is aware. 3rd edition, Brasília: Ministry of Health, 2008.
- _____. Ministry of Health. Health Surveillance Office. Department of STD, AIDS and Viral Hepatitis. Clinical Protocol and Therapeutic Guidelines for Integral Care to People with Sexually Transmitted Infections. Brasília: Ministry of Health, 2015.
- BRANDAO JUNIOR, P. S. Biotechnology and acquired immunodeficiency syndrome. Rio de Janeiro (RJ): Oswaldo Cruz Foundation, National School of Public Health; 2000.
- GOMES, A. C.; AGY, L. L.; MALAGUTI, S. E.; CANINI, S. R. M. S.; CRUZ, E. D. A.; GIR, E. Occupational Accidents with Biological Material and the Nursing Team in a Teaching Hospital. *Rev. Enferm. UERJ*, Rio de Janeiro, April/June; 17(2):220-3. 2009.
- MARZIALE, M. H. P.; SILVA, E. J.; HAAS, V. J.; ROBAZZI, M.L.C.C. Accidents involving biological material in a hospital from the Network on Work Accident Prevention - REPAT. *Revista Brasileira de Saúde Ocupacional*. São Paulo, 32 (115): 109-119, 2007.
- NISHIDE, V. M.; BENATTI, M. C. C.; ALEXANDRE, N.M.C. The Occurrence of Work Accidents at an Intensive Care Unit. *Rev. Latino-am. Enfermagem*. March-April; 12(2):204-11. 2004.
- SANTOS, N. J. S.; MONTEIRO, A. L. C.; RUIZ E. A. C. The first case of AIDS dueto occupational exposure in Brazil. *Braz J Infect Dis* 2002; 6(3):140-1.

CHARACTERIZATION OF ACCIDENTS WITH BIOLOGICAL MATERIAL IN A PUBLIC HOSPITAL IN PARANÁ

Abstract: Accidents with biological material are caused by many factors, with one of the primary ones being the healthcare professional's lack of attention and incorrect usage of the personal protective equipment (PPE). Laws have been created to protect this professional, as well as centers specialized to attend to these workers, informing them of the correct way to manage the situation, from the moment of the contamination, collecting material to laboratorial examinations, to the proper prophylaxis, which will be provided at no cost. The present study has as main objective to understand the profile of the professional who suffered an accident with biological material and was admitted in the University Hospital of Western Paraná between January and December 2014. The study was elaborated by a quantitative, retrospective documentary analysis. The data acquisition was realized in a public hospital in western Paraná, through a pre-established method with ten distinct variables considered relevant to this research. Which brought us the following characterizations: professionals aged 22 to 41 were the most frequently involved, most of them were nursing technicians, female, exposed by intravenous administration, vaccinated against Hepatitis B, residing in Cascavel/PR.

Keywords: Profile; biological material; healthcare professionals.

CARACTERISATION D'ACCIDENTS AVEC MATÉRIEL BIOLOGIQUE DANS UN HÔPITAL PUBLIC DE L'ÉTAT DU PARANÁ

Résumé : L'accident avec matériel biologique est dû à plusieurs facteurs, l'un des principaux étant le manque d'attention du professionnel de la santé et le mauvais usage des équipements de protection individuelle (EPI). Des lois ont été créées pour protéger ce professionnel, ainsi que des centres de référence pour les soins du travailleur, l'informant de l'origine de ses actions de la contamination, en effectuant une collecte des tests de laboratoire et la prophylaxie appropriée à laquelle elle devrait être fournie gratuitement. La présente étude a pour objectif principal de connaître le profil du professionnel qui a subi un accident avec du matériel biologique et qui a été soigné à l'Hôpital Universitaire de l'Ouest du Paraná, de janvier à décembre 2014. L'étude a été réalisée à l'aide de méthodes documentaires, quantitatives et rétrospectives. La collecte de données a été réalisée dans un Hôpital Public de l'Ouest du Paraná, au moyen d'un script préétabli comportant dix variables pertinentes pour le sujet de la recherche. Cela nous a apporté les caractérisations suivantes: les professionnels âgés de 22 à 41 ans étaient les plus touchés, principalement des infirmières techniques, des femmes, exposées par voie intraveineuse, vaccinées contre l'hépatite B et résidant dans la municipalité de Cascavel / PR.

Mots-clés: Profil; matériel biologique; professionnels de la santé.

CARACTERIZACIÓN DE ACCIDENTES CON MATERIAL BIOLÓGICO EN HOSPITAL PÚBLICO DEL PARANÁ

Resumen: El accidente con material biológico es ocasionado por varios factores, siendo una de las principales la falta de atención del profesional de salud y el mal uso de los equipos de protección individual (EPI's). Leyes fueron creadas para proteger a este profesional, así como centros de referencia para la atención del trabajador, informándole de la procedencia de sus acciones a partir de la contaminación, realizando recolección de exámenes de laboratorio, y la debida profilaxis al que deberá ser suministrada sin coste. El presente estudio tiene como principal objetivo conocer el perfil del profesional que sufrió accidente con material biológico y fue atendido en el Hospital Universitario del Oeste del Paraná, en el período de enero a diciembre de 2014. El estudio fue realizado por medio de análisis documental, cuantitativa y retrospectiva. La recolección de datos fue realizada en un Hospital Público del Oeste del Paraná, por medio de un guía preestablecido con diez variables distintas y relevantes al asunto de la investigación, que nos trajeron las siguientes caracterizaciones: los profesionales con edades entre 22 a 41 años fueron los más acometidos, en su mayoría técnicos de enfermería, del sexo femenino, expuestos por medio de administración endovenosa, vacunados con Hepatitis B y residiendo en el Municipio de Cascavel / PR.

Palabras clave: Perfil; material biológico; profesionales de la salud.

CARACTERIZAÇÃO DOS ACIDENTES COM MATERIAL BIOLÓGICO ATENDIDOS EM UM HOSPITAL PÚBLICO DO OESTE DO PARANÁ

Resumo: O acidente com material biológico é ocasionado por vários fatores, sendo uma das principais a falta de atenção do profissional de saúde e o mau uso dos equipamentos de proteção individual (EPI's). Leis foram criadas para proteger este profissional, bem como centros de referência para o atendimento do trabalhador, informando-o da procedência de suas ações a partir da contaminação, realizando coleta de exames laboratoriais, e a devida profilaxia ao qual deverá ser fornecida sem custo. O presente estudo tem como principal objetivo conhecer o perfil do profissional que sofreu acidente com material biológico e foi atendido no Hospital Universitário do Oeste do Paraná, no período de janeiro a dezembro de 2014. O estudo foi realizado por meio de análise documental, quantitativa e retrospectiva. A coleta de dados foi realizada em um Hospital Público do Oeste do Paraná, por meio de um roteiro pré-estabelecido com dez variáveis distintas e relevantes ao assunto da pesquisa. Que nos trouxeram as seguintes caracterizações: os profissionais com idades entre 22 a 41 anos foram os mais acometidos, em sua maioria técnicos de enfermagem, do sexo feminino, expostos por meio de administração endovenosa, vacinados com Hepatite B, e residindo no Município de Cascavel/PR.

Palavras-Chave: Perfil; material; biológico; profissionais da saúde.