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Parenteral herbicide poisoning: are we prepared to care?

ABSTRACT | Objective: report the case of a young patient admitted to the Intensive Care Unit (ICU), victim of suicide due to paraquat(PQ) parenteral poisoning and propose the main nursing diagnoses and interventions according to the International Classification for Nursing Practices (ICNP®). Method: retrospective descriptive study of the case study type, of a patient admitted to the public intensive care unit in the southern interior of the legal Amazon. Case report: the victim injected PQ into the biceps, the site evolved to induration and necrosis by coagulation, as the PQ progressed and metabolized, the patient presented with manifestations such as leukocytosis, hepatic and respiratory damage and then multiple organ failure (FMO). Conclusion: It is concluded that victims of PQ intoxication are considered victims of attempted suicide, oral intake above 40 / 45mg / kg significantly increases mortality to 100%, and parenteral administration contributes directly to FMO, and death in 100%.

Keywords: Paraquat; Herbicide; Intoxication; Nursing; Intensive care unit.

RESUMEN | Objetivo: informar el caso de un paciente joven ingresado en la Unidad de Cuidados Intensivos (UCI), víctima de suicidio debido a intoxicación parenteral por Paraquat (PQ) y proponer los principales diagnósticos e intervenciones de enfermería de acuerdo con la Clasificación Internacional de Prácticas de Enfermería(CIPE®). Método: estudio descriptivo retrospectivo del tipo de estudio de caso, de un paciente ingresado en la unidad pública de cuidados intensivos en el interior del sur de la Amazonía legal. Informe del caso: la víctima inyectó PQ en el bíceps, el sitio evolucionó a induración y necrosis por coagulación, a medida que la PQ progresaba y se metabolizaba, el paciente presentaba manifestaciones tales como leucocitosis, daño hepático y respiratorio y luego falla orgánica múltiple (FMO). Conclusión: se concluye que las víctimas de intoxicación PQ se consideran víctimas de intento de suicidio, la ingesta oral por encima de 40 / 45mg / kg aumenta significativamente la mortalidad al 100%, y la administración parenteral contribuye directamente a la FMO, y la muerte en 100%.

Palabras claves: Paraquat; Herbicida; Intoxicación; Enfermería; Unidad de terapia intensiva.

RESUMO | Objetivo: relatar o caso de uma paciente jovem admitida na Unidade de Terapia Intensiva (UTI), vítima de suicídio por envenenamento parenteral por paraquat (PQ) e propor os principais diagnósticos de enfermagem e intervenções de acordo com a Classificação Internacional para as Práticas de Enfermagem(CIPE®). Método: Estudo descritivo retrospectivo do tipo estudo de caso, de uma paciente admitida na unidade de terapia intensiva pública no interior sul da Amazônia legal. Relato de caso: a vítima injetou PQ no bíceps, o local evoluiu para induração e necrose por coagulação, conforme avanço e metabolização do PQ a paciente apresentou manifestações, como leucocitose, lesão hepatorenal, respiratória e em seguida falência múltiplas de órgãos (FMO). Conclusão: Conclui-se que vítimas de intoxicação por PQ, são considerados vítimas de tentativa de suicídio, a ingestão oral acima de 40/45mg/kg aumenta significativamente a mortalidade para 100%, e a administração parenteral contribui diretamente com FMO, e óbito em 100%.

Palavras-chaves: Paraquat; Herbicida; Intoxicação; Enfermagem; Unidade de terapia intensiva.

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INTRODUCTION

Paraquat (PQ) is today one of the most widely used herbicides in Brazil, extremely toxic, when dermal, digestive or respiratory absorption occurs, its toxicity being mainly observed in the lungs. (1,2) In countries like Sweden, PQ has been banned since 1983 because of its irreversible toxic action and the great risk of fatal accidents.

According to Melchiorri et al, (3) this herbicide is capable of producing fatal intoxications in humans, promoting respiratory disorder syndrome and depending on how the contact was, it can cause death in less than 30 days. With a mortality rate higher than 70%, the highest risk of poisoning occurs during dilution, but accidental deaths and suicide by ingestion are relatively common. (4-6)

According to Pinheiro(7) and Cruegeras et al,(4) PQ intoxication has a high prevalence of complications in pulmonary, hepato-cellular, renal and central nervous system function, and this justifies the evolution to multiple organ failure, with an average lethality rate of 100% when ingested more than 40 / 45mg / kg.

The World Health Organization (WHO), (8) reports that suicide is one of the top ten causes of mortality in all countries, and one of the top three causes of death in the 15 to 35 age group in developed countries, thus considering a universal public health problem, in which 90% of the suicides the individual had or has a mental problem, it also reinforces that in 2012 there were 804.000 suicides worldwide.

To Ministry of Health, (9) of the total of 8.697 cases of poisoning attributed to suicide attempts, 11,6% came from the use of pesticides. Besides that, in 2001, it registered 5.384 cases of poisoning caused by pesticides in the country, corresponding to 7,1% of all poisonings. 2019 data (10), revealed that exogenous intoxications are among the second leading cause of suicide in Brazil, with a



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total of 19.483 victims over the age of 20 in both sexes.

It is worth mentioning that the prevalence of depressive and suicidal clinical manifestations corresponds to the process and causes of self-extermination by the victim, among health professionals it is extremely high, one of the most prominent factors is the conditions and the workload exposed to these professionals. (11) Thus, the intensive care unit-ICU, is a sector that provides assistance to critically ill and at-risk patients, and that need to be cared for by nursing professionals 24 hours a day in an uninterrupted manner, so these professionals need to be well with themselves to provide human, safe and quality nursing care.

Besides, it is necessary to be endowed with knowledge, with the capacity, skills and attitudes to guarantee technical and scientific rigor in the implementation of nursing care, always seeking continuing education in order to improve and further intensify their clinical practices in guaranteeing safe and humanized care.

Therefore, this research aims to report the case of a young patient admitted to the Intensive Care Unit (ICU), victim of suicide due to parenteral poisoning by PQ and to propose the main nursing diagnoses and interventions according to the ICNP®.

METHOD

This is a retrospective descriptive case report of a 24-year-old female patient admitted to the ICU of the Regional Hospital of Cacoal-HRC-Rondonia / Brazil, after attempting self-extermination by contact with the PQ.

The time frame for searching for information was from 2012 to June 2018, the data collection took place from May to June 2018 and was organized in two phases, the first being access to information through the database of the Information System on Diseases of Notification (SINAN) for organizing the results of the

Doctoral thesis of the Postgraduate Program in Health Sciences-IAMSPE / SP "Exogenous intoxications in humans: a study on the clinical and epidemiological survey of care in Cacoal - Rondônia / Brazil" and noted the presence of an unprecedented case registered on the SINAN platform concerning the region of Rondônia, in which the victim had injected parenteral PQ into the biceps.

The second phase was through access to the victim's medical record in the HRC medical records file, the clinical data pertinent to the reported case were recorded in an instrument built by the researchers themselves, extracted all clinical information recorded by health professionals in the medical record and which could responding to the proposed objective, unreadable clinical information and laboratory tests were excluded, and after the data were grouped in a Word® and Excel® 2013 spreadsheet.

The diagnostic clinical grouping and reasoning was done to identify nursing diagnoses based on three stages: history and / or information collection, analysis, interpretations and the name of nursing diagnoses concerning the victim of PQ poisoning admitted in the ICU.⁽¹²⁾

For the systematization of the clinical case and thus organizing the information for clinical reasoning, the International Classification for Nursing Practice

(ICNP®) was used, since it is considered a broad and complex terminology that represents the domain of nursing practice. Nursing, is an international standard to facilitate the collection, storage and analysis of nursing data through reasoning and health definitions.⁽¹³⁾

The information was obtained after the consent of the Ethics and Research Committee-CEP of the Faculty of Biomedical Sciences of Cacoal (FACIMED), via Plataforma Brasil, under the number CAAE: 70461317.7.0000.5298, opinion nº 2.181.872 and amendment opinion nº: 2.506.518.

RESULTS

Case report

A 24-year-old female patient, a nursing technician, not active, with a history of depression, had thought about "withdrawing" her own life in the past. She was found in her house, lying on the floor, weeping, referring and pointing to having injected gramocil® (Paraquat) into her muscle, next to her was a 5ml syringe with a needle attached and still with product remains, and it was also found next to the victim one of the liter of said poison, was taken immediately to the emergency room in the city where she lived on March 12, 2013, being under observation for 24 hours, the tests

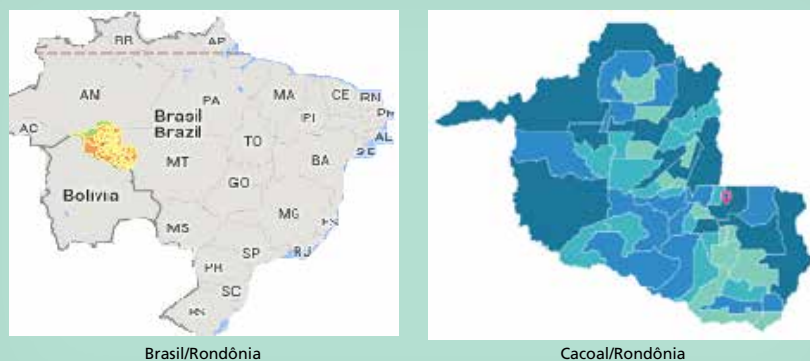
revealed, hemoglobin: 12.1mg / dl; hematocrit: 37.4%; leukocytes: 17,600mm / 3; platelets 140,000; urea: 18mg / dL; creatinine: 1.2mg / dL; aspartate aminotransferase (AST): 25U / L; alanine aminotransferase (ALT): 30U / L; Creatinophosphokinase (CPK): 168 IU / ml; serum potassium (K +): 3.0mE / q and serum sodium (Na +) 143mE / q.

On the second day, she was referred to an Emergency Room (PS) in a municipality that is a reference in health, arriving by ambulance, entering the unit walking, with Glasgow of 15/15, reporting having injected Gramocil® into the muscle and with a facial expression of concern, that is, regret, blood pressure (BP) of 120 / 80mmHg, heart rate (HR) of 80bpm, respiratory rate (RR) of 14irpm, oxygen saturation (SatO2) 96%, AST: 142U / L, ALT: 77U / L, urea: 68mg / dL, creatinine: 3.1mg / dL, thus revealing, according to the laboratory results, impairment of liver and kidney function, but still maintaining hemodynamic stability, in addition to the progressive evolution with the metabolism of PQ by the victim's organism, at the end of the second day, new tests revealed a decrease in hemoglobin to 10.9mg / dL and hematocrit to 32.4%, it is worth mentioning that the patient had a negative chorionic gonadotropin hormone (beta-HCG).

On the third day, the victim was referred to the ICU maintaining a level of consciousness, severe headache, "sad" facial expression, tachydyspnea (32rpm), oliguria, bleached, hyperemia and induration in the left biceps region with onset of necrotizing area, reporting be in that region where the PQ was injected parenterally, a double lumen central venous catheter was administered and drugs such as intravenous methylprednisolone 125mg 6 / 6h, N-acetylcysteine - Flumicil - (01 intravenous ampoule) and ascorbic acid (03 ampoules in the serum) were administered.

On the fourth day, with a worsening of the general condition, due to an RR

Figura 01: Mapa do Brasil, Rondônia e o local onde ocorreu a intoxicação parenteral por PQ, 2018.



Fonte: IBGE, 2018.⁽¹⁴⁾

Tabela-1 Parâmetros hemogasométricos de um paciente intoxicado por Paraquat parenteral atendido por um hospital público no interior de Rondônia/Brasil. 2018.

Variáveis	Dias da semana				
	14/03	15/03	16/03	17/03	18/03
pH	7.38	7.31	7.25	7.33	7.19
PaO2	55.2	62.2	53.9	61.6	52.9
PaCO2	28.1	36.8	39.0	X*	X*
HCO3	15.2	18.3	16.7	25.7	39.0
BE	-8.5	-7.1	-9.8	-0,3	8.8
SatO2	87.4	88.5	80.5	84.6	68.6

Fonte: os autores, 2020.

Legenda: X* dados não encontrados no prontuário.

Tabela-2 Análise das enzimas renais de um paciente intoxicado por Paraquat parenteral atendido por um hospital público no interior de Rondônia/Brasil. 2018.

Variáveis	Dias da semana				
	14/03	15/03	16/03	17/03	18/03
Ureia	87	89	140	170	214
Creatinina	5.7	6.7	8.3	9.0	10.3

Fonte: os autores, 2020.

Tabela 3 Distribuição dos diagnósticos e intervenções de enfermagem de acordo com a CIPE®(13) a vítima de intoxicação parenteral por PQ. 2018

Diagnósticos de enfermagem	Intervenções de enfermagem
Depressão	Atentar para o risco de suicídio. Orientar paciente sobre as atividades da equipe multidisciplinar. Promover segurança e conforto. Reduzir estímulos ambientais. Solicitar acompanhamento psicológico. Usar uma abordagem calma e segura.
Angústia	Ajudar o paciente a expressar os seus sentimentos. Criar uma atmosfera que facilite a confiança do paciente e da família. Estimular o pensamento positivo. Garantir continuidade do cuidado. Monitorar o estado psicológico.
Ansiedade	Avaliar nível de ansiedade. Avaliar o conhecimento e as expectativas do paciente. Encorajar a paciente a expressar suas inquietações. Ensinar atividades que diminuam a ansiedade. Estabelecer relação de confiança com o paciente. Estimular a comunicação com o paciente. Usar uma abordagem calma e segura.
Medo	Investigar o nível de ansiedade do paciente. Manter ambiente seguro. Orientar terapia de orientação para a realidade.
Conflito familiar	Oportunizar a família para expressar os seus sentimentos e preocupações. Ouvir a família.

of 50 BPM, mental confusion, general skin pallor and significant metabolic acidosis, orotracheal intubation (IOT) was performed with dripping sedoanalgesia (sleeping 20ml / 05mg / ml and 20ml fentanyl / 50mcg / ml). Hemodialysis was recommended by the intensive care physician, but the company that provided hemodialysis services did not have bedside technology available at the time of the patient's admission to the ICU, it is worth mentioning that this company was associated with the Rondônia Health Department (SESAU) through of the agreement via SUS, which has its physical structure external to the ICU. Due to the complexity and hemodynamic instability, the patient was unable to be removed from the ICU to undergo the hemodialysis session.

On the fifth day, the patient evolved to systemic complications corroborating with multiple organ failure (MOF), such as metabolic acidosis, bilateral mydriasis, hemodynamic instability such as tachycardia and severe hypotension with no response to fluids and vasopressors, respiratory function with the presence of snoring and pulmonary rales. diffuse and presence of oral bleeding and via orotracheal tube (OTT), moderate to severe hypoxemia as shown in the arterial blood gas data in table 1, renal system with the presence of choluria, oligoanuria in anasarca, and severe renal failure as revealed by the renal enzymes in table 2. The patient had an unfavorable clinical outcome to all interventions implemented by the multiprofessional team, mainly CPR maneuvers, died 5 days after parenteral intoxication.

DISCUSSION

Among the various diseases that affect the population in the world, depression corresponds to 4.3% of them, and is amidst the biggest and main causes of disability in women. And associated with depressive conditions, suicide is a global phenomenon, being the main

Dispneia	Auscultar sons respiratórios, observando presença de ruídos adventícios. Aspirar às vias aéreas mediante ausculta pulmonar. Avaliar a perfusão tissular. Manter a cabeceira da cama elevada. Avaliar os sinais de cianose periférica e central.
Hipóxia por congestão	Posicionar paciente no leito de forma confortável. Coletar e avaliar a gasometria arterial. Implementar ações para minimizar a hipoxemia
Respiração prejudicada	Monitorar o padrão respiratório. Monitorar os sinais vitais. Observar o nível de consciência. Observar perfusão periférica. Verificar a saturação do oxigênio pela oximetria de pulso ou gasometria. Elevar a cabeceira da cama. Auscultar sons respiratórios, observando presença de ruídos adventícios.
Troca de gases prejudicada	Aspirar às vias aéreas, quando necessário. Avaliar a frequência e a profundidade respiratória de forma contínua. Manter elevação da cabeceira do leito a 35-45°. Monitorar gasometria arterial e os sinais de desequilíbrio ácido-básico. Monitorar o batimento de asas do nariz, as retrações torácicas e a cianose. Monitorar sinais de congestão pulmonar e sistêmica.
Desequilíbrio de eletrólitos	Monitorar resultados laboratoriais (eletrólitos). Monitorar pressão arterial e frequência cardíaca. Controlar sinais de hidratação. Controlar, rigorosamente, a terapia com líquidos e eletrólitos.
Edema	Avaliar a congestão pulmonar pela ausculta. Avaliar as condições da pele e a perfusão. Mudar o decúbito a cada duas horas. Examinar condições de pulsos periféricos.
Risco de desequilíbrio de eletrólitos	Monitorar o débito urinário, descrevendo a diurese quanto ao volume, coloração e frequência. Monitorar resultados dos exames laboratoriais (eletrólitos).
Condição nutricional prejudicada	Monitorar a ingestão da dieta. Monitorar os sinais vitais.
Eliminação urinária reduzida	Estimular a eliminação urinária. Monitorar a eliminação urinária, incluindo frequência, quantidade, cor e odor. Registrar ingestão e eliminação de líquidos.
Náusea	Orientar respirações profundas quando apresentar náuseas. Promover higiene oral frequentemente. Proporcionar alimentação satisfatória. Repor fluidos orais com líquidos frios.
Vômito	Avaliar as características do vômito quanto à volume, coloração e odor. Avaliar o estado de hidratação do paciente. Higienizar a cavidade oral após o vômito. Posicionar a cabeça do paciente lateralizada. Posicionar o paciente em semi-fowler para prevenir aspiração

cause of death among adolescents aged 15 to 19 years.⁽⁸⁾ Depression and suicide imply the influence of biopsychosocial, genetic, cultural and environmental factors, being an important indicator of the quality of life in society in general.⁽¹⁵⁾

Exogenous intoxication is a universal public health problem, it is believed that 1.5 to 3% of the population gets intoxicated every year and pesticides are among the villains in attempting suicide mainly due to the easy access that the population has to the those products. In Brazil, this represents approximately 4.800.000 new cases each year, of which, 0.1 to 0.4% of intoxications result in death.⁽¹⁵⁾

The routes of exposure to these substances, most used by humans, are the gastrointestinal, respiratory and skin routes. Since the pulmonary and skin pathways are more important in occupational and environmental toxicology, and gastrointestinal in food and drug toxicology, and intentional intoxications (suicides and homicides).⁽¹⁶⁾

Generally in humans, the ingestion of a significant amount of PQ leads to death within two to three weeks, as a result of acute renal failure, liver failure and, mainly, respiratory failure caused by pulmonary inflammation and fibrosis.^(6,17)

PQ is highly toxic, after being absorbed and distributed to tissues.⁽¹⁷⁾ This results in its high capacity to react with oxygen which, through oxidation-reduction reactions, leads to the production of highly damaging free radicals for cells. Most authors suggest that PQ toxicity results from its enormous ability to react with oxygen.⁽¹⁸⁾

The clinic of a patient victim of parenteral PQ intoxication differs from oral intoxication in that patients who ingest PQ suffer from oral ulcers, hemoptysis and gastrointestinal symptoms, such as nausea, vomiting, diarrhea and gastrointestinal bleeding.⁽⁶⁾

Parenteral poisoning is rare, however, lethal.⁽¹⁷⁾ According to researchers,⁽¹⁸⁾ when the victim decides in

Integridade da pele prejudicada	Avaliar a evolução de lesões. Avaliar a hidratação da pele. Avaliar a necessidade de curativo e cobertura para a lesão. Avaliar a região afetada, quanto aspecto, coloração, tecido cicatricial, secreção, odor e tipo de curativo.
Necrose	Proporcionar posicionamento adequado. Realizar curativo diário. Realizar desbridamento mecânico do material desvitalizado. Supervisionar a pele circunvizinha à lesão.
Risco de choque	Avaliar cor, temperatura e textura da pele. Avaliar nível de consciência. Coletar lactato sérico. Monitorar débito urinário. Monitorar pressão venosa central (PVC).
Risco de glicemia instável	Realizar rodízio de punção das falanges distal para a verificação da glicemia capilar. Monitorar sinais de hipoglicemia. Monitorar sinais de hiperglicemia.
Hipertermia	Avaliar resposta a termorregulação. Monitorar diminuição do nível de consciência. Monitorar e registrar sinais neurológicos. Monitorar nível de consciência.
Consciência prejudicada	Avaliar a função cognitiva. Avaliar o nível de consciência a cada duas horas. Avaliar os reflexos. Avaliar os sinais vitais. Monitorar débito e eliminação urinária. Avaliar o padrão das pupilas com a aplicação do pupilômetro. Monitorar as alterações no nível de consciência, por meio da escala de coma de Glasgow.

Fonte: Nóbrega (2018).⁽¹³⁾

this way, it is always associated with attempted suicide. As reported, the victim had already shown warning signs such as trying to "reap" his own life at other times. According to the Ministry of Health, ⁽¹⁰⁾ thoughts and feelings of wanting to interrupt one's life can be unbearable and difficult to know what to do and how to overcome these feelings and the best recommendation is prevention and seeking help. The WHO ⁽⁸⁾ recommends that one of the strategies is to improve clinical management and mental health care for people intoxicated by pesticides in health facilities at different levels.

There are few clinical data on parenteral exposure by PQ. The rare case now proposed showed continuous and gradual evolution and clinical progression as

the distribution and metabolism of PQ by the body occurred.

The concentration of PQ in each tissue is related to its vascularization, the concentration of the herbicide in plasma, being higher in the lungs and kidneys. However, the main damage occurs at the lung level, culminating in respiratory failure, hypoxemia and death. ⁽⁶⁾

As a result of liver damage, there is a reduction in plasma volume, due to diuresis or the displacement of fluids into the intestinal lumen, and with this, hyperazotemia, hyponatremia, hypokalemia, proteinuria, hematuria, pyuria, oliguria / anuria, glycosuria can be seen. ^(19,20) This goes against the laboratory manifestations and changes that the victim presented as azotemia, hypokalemia, hematuria and oliguria and anuria.

Kidney damage impairs the main pathway of excretion of PQ, thus allowing a more prolonged contact of the organism with high concentrations of this compound, which contributes significantly to mortality. ⁽¹⁹⁾

The PQ exerts greater toxicity in the lungs, considering its high cellular concentrations, being higher than the concentration in the plasma. PQ toxicity at the pulmonary level occurs in two distinct phases, the acute phase, which causes damage not only to the lungs, but also to the liver, kidneys and heart, and the patient may die due to multiorgan failure. Patients who resist this first stage are subject to a late stage characterized almost exclusively by lung damage, in which extensive pulmonary fibrosis develops. ⁽²⁰⁾

Pulmonary fibrosis is clinically evidenced by respiratory failure with cough, tachypnea, progressive dyspnea, hypoxemia and peripheral cyanosis, peripheral tissue perfusion > 5sec, which can culminate in death. Invasive mechanical ventilation (IMV) and artificial non-invasive ventilation (NIMV), or other low or high flow oxygen therapy methods, are not able to reverse hypoxemia and delay the clinical outcome that culminates in 100% mortality. ⁽²⁰⁾

According to researchers ⁽²⁰⁾, oxygen supply should be avoided as much as possible, which favors the formation of free radicals, aggravating the PQ-induced toxicity. However, another study, ⁽¹⁹⁾ reveals that in cases of severe respiratory failure, IMV should be used to minimize suffering and relieve patient fatigue.

A patient with parenteral PQ intoxication does not have direct irritation of the mucosa, but has symptoms, such as nausea and vomiting, which can be explained by the systemic effect of Paraquat on the central nervous system. The most common are local symptoms of skin or vessels. ⁽¹⁷⁾ In the case mentioned above, the patient developed induration in the region of the left biceps (inner face) at the application site, with the onset of

a coagulation necrosis area and needed special skin care by the nursing team in relation to coverage and debridement of the necrotic area.

Skin lesions can be explained by the local reaction due to the occurrence of trivial leakage of the PQ solution to the adjacent soft tissue and / or local blood vessel injury such as phlebitis, related specifically to the injection. Systemic toxicological effects are also suspected of having a faster onset in patients with intravenous intoxication than in patients with oral ingestion.⁽¹⁷⁾

The nursing team has a fundamental role in caring for patients who are victims of poisoning. This care must be based on principles and guidelines that guide systematized and targeted actions, seeking measures to prevent and prevent complications early due to the substance involved.⁽²¹⁾ For this, it is necessary to use the nursing process, which is composed of 5 stages and that the study now proposed sought to bring only guidance to health professionals focused on the first and second stages of the nursing process.

The performance of nurses in conjunction with the multidisciplinary team, in all stages of care, whether preventive, emergency curative or follow-up during hospitalization and after hospital discharge, has a favorable impact on reducing the rates of recurrence of these intoxications.

The patient did not have the clinical and hemodynamic conditions to undergo hemodialysis, given that the hemodialysis clinic is externally to the ICU, being contraindicated to transport her due to instability and during the hospitalization period there was no bedside hemodialysis service implanted within the ICU.

According to Schmitt et al., PQ is not a properly dialysable toxic, as it has a high molecular weight and is not bound to proteins.⁽²²⁾ In patients with symptomatic acute renal failure, hemodialysis should be considered. However, these patients have a poor prognosis in terms



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of lung injury, so it is unlikely that the technique will change the outcome.⁽²³⁾

The proposed treatment in the intensive care unit was N-Acetylcysteine, which is a sulfhydryl reagent, with potential beneficial effects in PQ poisoning through various mechanisms, eliminating reactive oxygen species, increasing glutathione and reducing inflammation, lipid peroxidation and apoptosis.⁽²⁴⁾

The use of glucocorticoids and cyclophosphamide combined has been playing an important role in increasing survival in PQ poisoning. The most widely studied treatment regimen includes cyclophosphamide, methylprednisolone and dexamethasone,⁽²³⁾ adding to the anti-inflammatory action of glucocorticoids and the immunosuppressive action of cyclophosphamide.

Individuals intoxicated by PQ have a mortality rate between 63% and 70% and a short survival period, depending on the dose ingested and absorbed, the complications resulting from the intoxication, and the choice of effective treatment.^(6,25)

According to other researchers,⁽²⁶⁾ the PQ, when administered parenterally, has a mortality rate of 100%.

CONCLUSION

The research showed how important it is to identify the warning signs related to suicidal behaviors, so it is necessary to demystify the problem and point to the importance of looking closely and continuously for health professionals and the general population. In this sense, through the clinical case, the patient's clinical evolution was described, who showed behavior and warning signs of suicide, hepatorenal impairment and severe respiratory clinical manifestations, causing multiorgan failure, culminating in high mortality.

Parenteral intoxication by PQ is a problem with high incidence and high lethality, especially in the city at the heart of this analysis, so research and

studies in the area are of paramount importance, in order to expand knowledge on the topic, assisting the health team to find ways to implement care that avoids the rapid evolution of PQ and thus can improve care for critically ill patients.

The main nursing diagnoses were implemented based on the ICNP® nomenclature, thus facing the scarcity of studies involving victims of PQ parenteral intoxication and which suggests new studies exploring more nursing actions focusing on the systematization of nursing care.

The multidisciplinary team is responsible for the patients in the ICU, however, the nurse is the only professional along with his team who is at the bedside 24 hours for 7 days a week, so everyone should seek evidence-based practices about the predominant characteristics and evolution of the patient who was intoxicated by PQ, being prepared to implement the necessary interventions, which minimize the evolution of PQ, by the victim's organism.

In Brazil, there was a shortage of current research addressing PQ intoxication, so the result of this report may

awaken the scientific community to seek new research, which can contribute to actions in the preventive context, in addition to improving evidence-based practices. It also suggests that the training institutions in the health area, not only discuss, but that they introduce content such as depression, suicide and exogenous intoxications in their curriculum. 🐦

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest in the current research.

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