REVISTA NEUROCIÊNCIAS

Proposal for a seizure emergency care protocol

Proposta de protocolo de atendimento de emergência de crise convulsiva

Propuesta de protocolo de atención de emergencias por crisis convulsivas

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Resumo

Introdução. Os protocolos clínicos desempenham um papel importante no espaço de trabalho dos profissionais de saúde, especialmente no departamento de emergência. Por isso, é necessário padronizar os modelos de atendimento objetivando melhorar o tratamento e o prognóstico dos pacientes. **Objetivo.** Propor um protocolo de atendimento a pacientes adultos não gestantes durante um episódio de crise convulsiva no Serviço de Emergência de um hospital terciário de uma cidade do Vale do Itajaí, em Santa Catarina. **Método.** Revisão integrativa, com abordagem qualitativa, através da coleta de dados sobre formas de tratamento de pacientes adultos com crises convulsivas no Serviço de Emergência. Os dados foram coletados em três bases de dados, bem como em livros de medicina publicados entre 2018 e 2023, em português e inglês. **Resultados.** Foram analisados 562 artigos e excluídos 180 por duplicidade, restando 382 artigos analisados por título e resumo, dos quais foram selecionados 43, sendo que 12 atingiram os critérios de inclusão. Fizeram parte também 6 livros da literatura de clínica médica, medicina de emergência e medicina intensiva. Além disso, foram utilizadas as diretrizes das sociedades americana e europeia para basear o formato do fluxograma. **Conclusão.** Há a necessidade de uma proposta de protocolo de atendimento para este tipo de emergência, que muitas vezes requer diversas medicações e ações por parte da equipe hospitalar para melhorar o cuidado médico e o prognóstico dos pacientes. Assim, destaca-se a necessidade imperativa de mais estudos sobre o tema, elucidando com maior clareza os medicamentos mais eficazes para o controle das crises.

Unitermos. Doenças do Sistema Nervoso; Manifestações Neurológicas; Convulsões; Estado Epiléptico; Protocolos Clínicos; Serviço Hospitalar de Emergência

Abstract

Introduction. Clinical protocols play an important role in the workspace of healthcare professionals, especially in the emergency department. It is therefore necessary to standardize care models as a way of improving patient care and prognosis. **Objective.** To proposal of a protocol for caring for non-pregnant adult patients during an episode of seizure in the Emergency Department of a tertiary hospital in a city in the Itajaí Valley in Santa Catarina. **Method.** This is an integrative review, with a qualitative approach, by collecting data on forms of treatment for adult patients with seizures in the Emergency Department. The data was collected using three databases, as well as medicine textbooks published between 2018 and 2023, in Portuguese and English. **Results.** A total of 562 articles were analyzed and 180 were excluded due to duplication, leaving 382 articles analyzed by title and abstract, of which 43 were selected, 12 of which met the inclusion criteria. Six books from the internal medicine, emergency medicine and intensive care medicine literature were also included. In addition, the guidelines of the American and European societies were used to base the format of the flowchart. **Conclusions.** This study has shown that a proposal for a care protocol for this type of emergency is necessary, as it often requires various medications and actions on the part of

the hospital team to improve medical care and patient prognosis. It therefore highlights the imperative need for further studies on the subject, elucidating more clearly the most effective drugs for controlling crises.
Keywords. Nervous System Diseases; Neurologic Manifestations; Seizures; Status Epilepticus; Clinical Protocols; Emergency Service, Hospital

Resumen

Introducción. Los protocolos clínicos juegan un papel importante en el espacio de trabajo de los profesionales de la salud, especialmente en el servicio de urgencias. Por tanto, es necesario estandarizar los modelos de atención con el objetivo de mejorar el tratamiento y el pronóstico de los pacientes. **Objetivo**. Proponer un protocolo de atención a pacientes adultas no gestantes durante un episodio de crisis convulsiva en el Servicio de Urgencias de un hospital terciario de una ciudad del Valle de Itajaí, en Santa Catarina. **Método.** Revisión integradora con un enfoque cualitativo, que recoge datos sobre las formas de tratar a los pacientes adultos con convulsiones en el Servicio de Emergencias. Los datos se recogieron de tres bases de datos, así como de libros médicos publicados entre 2018 y 2023, en portugués e inglés. **Resultados.** Se analizaron 562 artículos y se excluyeron 180 por duplicación, quedando 382 artículos analizados por título y resumen, de los que se seleccionaron 43, 12 de los cuales cumplían los criterios de inclusión. También se incluyeron seis libros de medicina clínica, medicina de urgencias y medicina intensiva. Además, se utilizaron las directrices de las sociedades americana y europea para basar el formato del diagrama de flujo. **Conclusiones.** Este estudio ha demostrado la necesidad de una propuesta de protocolo asistencial para este tipo de urgencias, que a menudo requieren diversas medicaciones y actuaciones por parte del equipo hospitalario para mejorar la atención médica y el pronóstico de los pacientes. Esto pone de manifiesto la necesidad imperiosa de realizar más estudios sobre el tema, aclarando cuáles son los fármacos más eficaces para el control de las crisis.
Palabras clave. Enfermedades del Sistema Nervioso; Manifestaciones Neurológicas; Convulsiones; Estado Epiléptico; Protocolos Clínicos; Servicio de Urgencia en Hospital

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INTRODUCTION

Clinical protocols are important in the day-to-day management of clinical patients by healthcare professionals, as they are used as guiding tools for clinical conduct[1]. It should be clarified that clinical protocols have a scientific basis and use specific criteria for their formulation, just like therapeutic guidelines[2].

Therapeutic guidelines, unlike clinical protocols, do not present a specific model of conduct to be followed, but rather scientific evidence on the most appropriate course of action

to be taken at any given time[3]. In this way, clinical protocols are based on the evidence contained in the guidelines, thus establishing an appropriate course of action[1].

It can be seen that the protocols are useful tools in the day-to-day work of healthcare professionals and that their conduct is based on guidelines, which in turn were drawn up based on scientific studies. However, it should be noted that they cannot be exclusive to all populations, since it should be understood that the guidelines are not universal either and must be individualized for each place of use[4].

Consequently, each unit should have its management directed towards its own target population, since there are considerable epidemiological differences in each population[5]. It is clear that both guidelines and protocols, since they are based on scientific literature, serve to help healthcare professionals diagnose and treat health problems, thus demonstrating their clinical importance[1-3].

This raises the following question: What are the protocols for seizure care used by the Emergency Departments of the sources consulted? With this in mind, the aim of this study is to propose a protocol for the care of non-pregnant adult patients during an episode of seizure in the ED of a tertiary hospital in a city in the Itajaí Valley, in Santa Catarina, with the aim of improving medical care and patient prognosis in the department.

Drawing up a proposal is necessary, since there is an institutional demand for the creation of a model of care for these cases in the emergency sector, with a view to

standardizing care and improving prognosis for patients.

METHOD

This is an integrative review, with a qualitative approach, developed from the definition of the theme and guiding question, followed by the establishment of inclusion and exclusion criteria, then defining the information extracted from the articles and books chosen, to be later analyzed and synthesized to carry out the proposal in question.

Once the topic had been selected, the *PICO* strategy was used to delimit the inclusion and exclusion criteria, since *PICO* refers to the acronym patient, intervention, comparison and outcome, as shown in Table 1.

Table 1. PICO strategy.

Selection criteria	Inclusion criteria	Exclusion criteria
Participants	Full articles and books published between 2018 and 2023, in Portuguese and English, containing data on the treatment of non-pregnant adult patients with seizures in emergency situations.	Articles and books published before 2018 and published articles that do not include the treatment of non-pregnant adults, as well as articles or documents that require payment in any form for their display.
Intervention	Management of seizures in an acute setting.	Conduct for other types of pathologies.
Comparison	Different approaches to be used for the best seizure control.	Non relevant conducts for crisis control.
Outcome	Improved prognosis for patients affected by the pathology in question.	

This collection will be carried out through the PubMed, Scielo and VHL databases, using a combination of the following keywords: "Seizures"; "Status Epilepticus"; "Therapeutics"; "Clinical Protocols"; "Health Services"; "Emergency Service, Hospital"; "Convulsões"; "Estado Epiléptico". The number of articles from the databases were organized in a table (Table 2), which contains the date of the search, the combination of descriptors used in each database and the number of articles (N), before and after filtering in the database. In addition, searches were carried out in textbooks on clinical medicine, emergency medicine and intensive care medicine, respecting the inclusion criteria of the work.

The data collected was included in the PRISMA flowchart (Figure 1) for screening, using the free Lucidchart tool, which was also used to draw up the treatment flowchart (Figure 2), based on the model guidelines of the American Epilepsy Society[6] and the European Academy of Neurology[7]. After selecting the articles included in the research, their information was selected and included in Table 3, and the same was done with the books in Table 4 (the books contained more information, but only the information mentioned in the paper was included in the table, to avoid redundancy). Once this was done, the research proposal was established.

Table 2. Number of articles selected from the databases, according to date and descriptors.

Search date	Database	Combination of descriptors	N of articles	N after filtering for date, language and open access	N of duplicated articles excluded
18/12/2023	PubMed	Seizures; Clinical Protocols; Emergency Service, Hospital	38	6	0
19/12/2023	PubMed	Seizures AND therapeutics AND Emergency Service, Hospital	699	93	5
19/12/2023	PubMed	Seizures AND Status Epilepticus AND therapeutics AND Clinical Protocols AND Health Services	46	6	1
19/12/2023	PubMed	Convulsões AND Estado Epiléptico	106	13	0
19/12/2023	Scielo	Seizures AND Status Epilepticus AND therapeutics	2	1	0
19/12/2023	VHL	Seizures AND Status Epilepticus AND Clinical Protocols	123	26	6
20/12/2023	VHL	Status Epilepticus AND therapeutics	57	26	2
20/12/2023	VHL	Seizures AND Emergency Service, Hospital	1104	142	46
20/12/2023	PubMed	Seizures AND Emergency Service, Hospital	1400	222	105
22/12/2023	Scielo	Seizures AND Emergency Service, Hospital	1	0	0
22/12/2023	Scielo	Seizures AND Status Epilepticus AND Clinical Protocols	1	0	0
22/12/2023	Scielo	Seizures; Clinical Protocols; Emergency Service, Hospital	0	0	0
22/12/2023	PubMed	Seizures AND Status Epilepticus AND Clinical Protocols	163	26	14
22/12/2023	Scielo	Seizures AND Status Epilepticus AND therapeutics AND Clinical Protocols AND Health Services	0	0	0
22/12/2023	Scielo	Seizures AND therapeutics AND Emergency Service, Hospital	0	0	0
22/12/2023	Scielo	Convulsões AND Estado Epiléptico	10	1	0
26/12/2023	VHL	Seizures AND Status Epilepticus AND therapeutics AND Clinical Protocols AND Health Services	0	0	0
		Total	**3750**	**562**	**179**

Figure 1. PRISMA flowchart containing the data collected and sorted for the research.

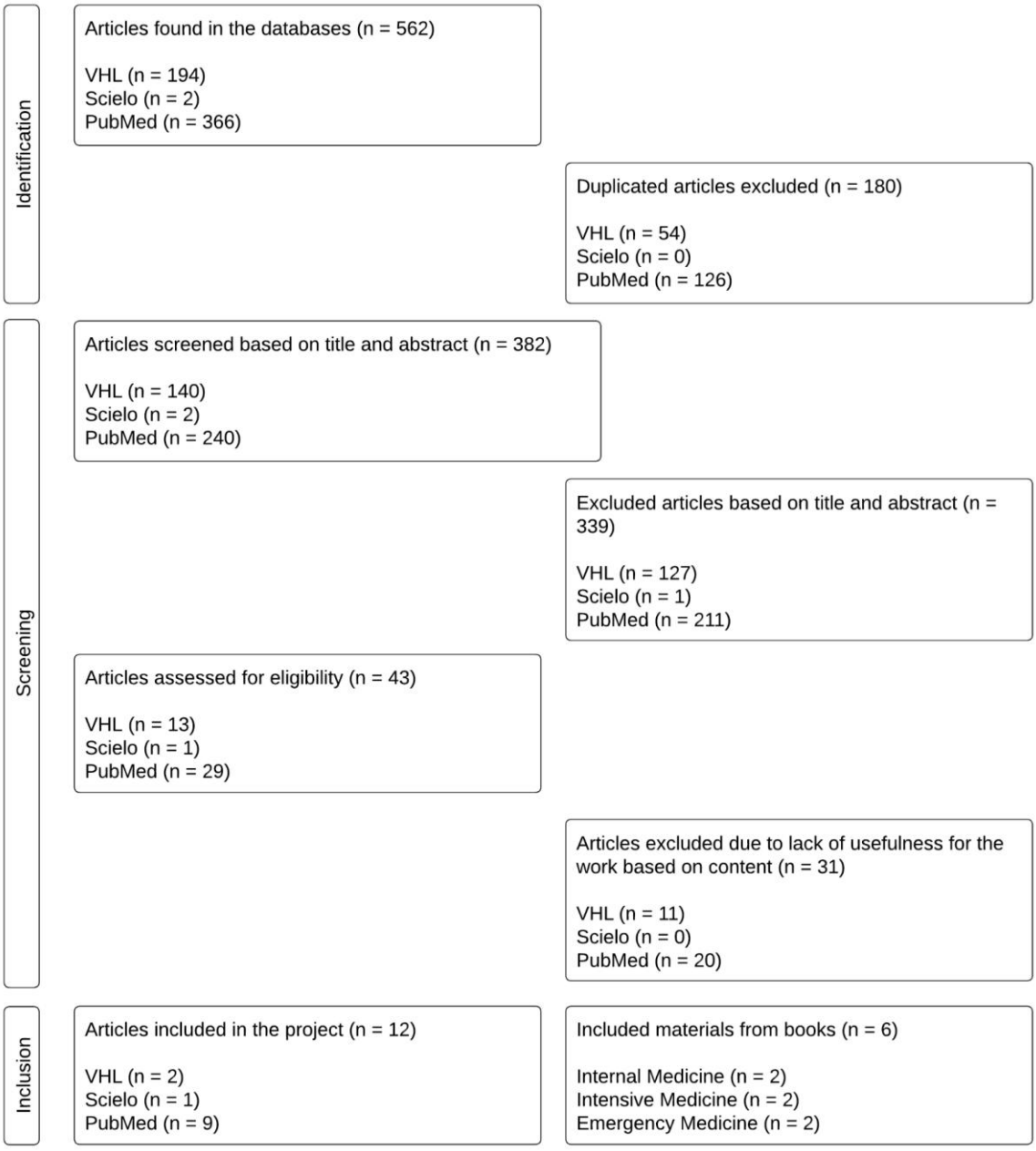

Figure 2. Seizure treatment flowchart for non-pregnant adults in the ED of the hospital in question.

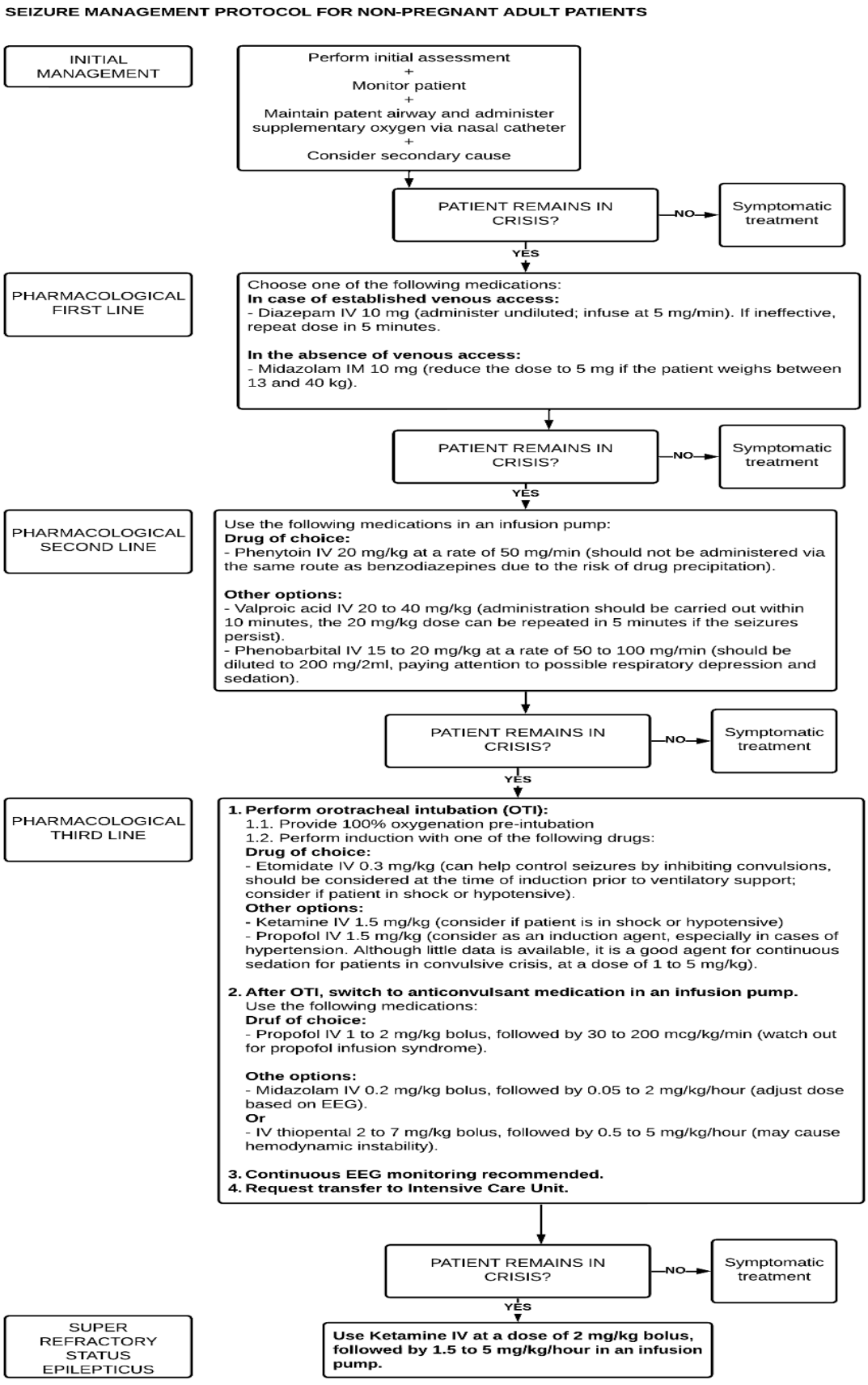

Table 3. Selected articles with their respective information.

Author/Year	Study design	Objectives	Conclusion, as in the article
Norisue *et al.* 2018[8]	Revision article	Introduce five preliminary protocols	These tentative protocols can be useful tools for bedside clinicians who need to provide standardized and consistent treatment in a dynamic clinical environment. As most of the contents of the protocol are not supported by evidence, they should be validated in prospective controlled studies. We suggest that these protocols should serve as drafts for the design of systems, environments and clinical preferences in each institution.
Gomes *et al*. 2018[9]	Narrative literature review	Proposing a treatment protocol for super refractory status epilepticus in level III intensive care units	A treatment protocol based on a sequential combination of anesthetic drugs, antiepileptic drugs and alternative therapies has been proposed. Strategies for evaluating the effectiveness of the therapy and progressive pharmacological weaning according to the clinical response obtained are also proposed.
Miró *et al*. 2018[10]	Retrospective observational cohort study	To describe the experience of the neurologist on duty at the hospital with the performance of the emergency EEG due to the suspicion of non-convulsive status epilepticus and other situations and to analyze the usefulness of the diagnosis of Non-Convulsive Status Epilepticus.	The study concluded that, in an appropriate clinical context, emergency EEG performed by the neurologist on duty is a sensitive and specific tool for the diagnosis of NCSE.
Gaínza-Lein *et al*. 2019[11]	Revision article	Describe basic science, animal models and clinical data related to the timing of treatment in status epilepticus	In conclusion, morbidity and mortality can be reduced with rapid and effective intervention.
Crawshaw *et al*. 2019[12]	Revision article	Previous and established management for convulsive SE for which there is more evidence to guide practice, although it briefly discusses the treatment of other types of SE.	Previous and established management for convulsive SE for which there is more evidence to guide practice, although it briefly discusses the treatment of other types of SE.
Quintana *et al*. 2021[13]	Retrospective descriptive observational study	Evaluating the usefulness of EEG in the emergency department	Routine EEG is useful in the emergency department, even in patients with normal CT or MRI, as it helps determine clinical management or choice of antiepileptic drugs.
Cruickshank *et al*. 2022[14]	A systematic review of randomized trials	To evaluate the current effectiveness and cost-effectiveness of treatment for adults with status epilepticus seizures in the pre-hospital setting.	Both diazepam and intravenous lorazepam administered by paramedics were more effective than placebo in a prehospital setting in adults with status epilepticus seizures, and intramuscular midazolam is not inferior to intravenous lorazepam.
Zehtabchi *et al*. 2022[15]	Emergency treatment trial	To test the hypothesis that patients with status epilepticus resistant to benzodiazepines have a residual occurrence of electrographic seizures in the subsequent 24 hours.	This evidence supports earlier initiation of EEG monitoring in patients suffering from status epilepticus seizures, including those with evidence of treatment success.
Chiu *et al*. 2022[16]	Cohort study	To determine whether propofol and midazolam are equally effective in controlling refractory status epilepticus.	The study suggests that optimizing pre-hospital treatment and goal-directed management, including prolonged EEG monitoring, may offer opportunities for patients with RES. Comparable results were observed for RES patients with predominantly acute underlying etiologies treated with propofol and midazolam infusions.
Pinto *et al*. 2022[17]	Revision article	Review the diagnosis, monitoring and treatment of status epilepticus	Electroencephalogram (EEG) monitoring is crucial for the diagnosis of non-convulsive SE because the clinical manifestations are non-specific. Also, after initial control of convulsive SE, there is a significant risk of ongoing electrographic seizures and/or patterns that warrant further treatment. During SE, treatment and withdrawal, especially with anesthetics, deep monitoring of sedation and seizure control could only be done safely with EEG monitoring.
Sharshar *et al*. 2023[18]	Double-blind randomized controlled trial	To determine whether valproic acid as a complementary treatment to the step-by-step strategy improves the outcome of patients with de novo generalized status epilepticus seizures	Valproic acid for generalized convulsive status epilepticus is well tolerated, but did not increase the proportion of patients discharged from hospital by day 15.
Mamta *et al*. 2023[19]	Prospective observational study	Compare the seizure control time with phenytoin to the fosphenytoin protocol in the ED	The average time to seizure cessation in the fosphenytoin group was less than half that in the phenytoin group. Despite the higher cost and fewer adverse effects compared to phenytoin, the benefits seem to outweigh the limitations.

Table 4. Table containing information collected from the books.

Author	Informations used on research
Ladeira 2022[20]	Information on Lorazepam, Phenytoin, Fosphenytoin and Valproic Acid, as well as information on patient follow-up.
Wiebe 2020[21]	Information on the initial approach, mainly related to cardiovascular stabilization and a patent airway.
Moreira *et al*. 2023[22]	Information on the initial approach and information on Diazepam, Midazolam, Lacosamide and Phenobarbital. It also highlighted follow-up management.
Costa *et al*. 2023[23]	Information on the drugs recommended in the process of orotracheal intubation of patients with seizures, as well as maintenance and instructions for ventilatory support. Information was collected on Etomidate, Ketamine, Propofol, Midazolam and Succinylcholine.
Castro *et al*. 2023[24]	Information about drugs and access routes at each stage of treatment, especially with regard to the second-line approach.
Tomazini *et al*. 2023[25]	Information on the patient's initial management and information on Diazepam, Midazolam, Lorazepam, Propofol, Thiopental and Ketamine, as well as follow-up, was used.

RESULTS

A total of 562 articles were analyzed using the search methodology. Of this number, 180 were excluded because they were duplicates and the remainder (n=382) were selected based on the title and abstract, resulting in 43 eligible articles. After reading these articles, 31 did not meet the needs of the research and were eliminated. The remaining publications (n=12) were included in the research. In addition to the publications from the databases, some works from the clinical medicine literature were included, such as Wiebe[21] "Goldman-Cecil Medicine - 26th edition" and Castro[24] "Manual do Residente de Clínica Médica - 3ª edição", as well as the intensive care medicine literature Ladeira[20] "Medicina intensiva: abordagem prática - 5ª edição" and Tomazini[25] "Medicina intensiva: revisão rápida - 2ª edição", along with emergency medicine books such as Moreira[22] "Medicina de emergência: abordagem prática - 17ª edição" and Costa[23] "Manual de via aérea na emergência - 1ª edição".

The selection of publications for this study is shown in Figure 1.

DISCUSSION

From an analysis of the data collected, various types of approach to seizures were observed. A review article by Norisue 2018[8] with the aim of introducing five care protocols, including seizure and non-convulsive status epilepticus, concluded that protocols are useful for the day-to-day work of physicians, but should be better evaluated by studies, as will be presented next. That said, the following approaches have been proposed for the management of seizures in the Emergency Department (ED).

Initial management

The initial approach to the patient in the ED must be agile, since the best prognosis is directly related to the speed of treatment, as Crawshaw 2019[12] elucidate in their review article. Another review article, published by Gaínza-Lein 2019[11] aimed to describe the basic science, through animal models and clinical data related to the timing of treatment of status epilepticus, analyzing the results of 15 studies, observed that late approaches are subject to greater therapeutic failures on the part of benzodiazepines, which would justify the speed of treatment, in addition to preventing secondary injuries, as justified by Pinto 2022[17] in their review article, which, in addition to emphasizing agility, explains the importance of ruling out secondary causes for

the seizure. In this way, the agility of the first approach must be taken into account.

Firstly, Moreira 2023[22] reiterate the importance of monitoring the patient on arrival at the ED, measuring heart rate, blood pressure and peripheral oxygen saturation, as well as ensuring peripheral venous access and carrying out the initial examination immediately afterwards to check that hemodynamic support is maintained, as recommended by Tomazini 2023[25]. With regard to the airway, Wiebe 2020[21] states that the airway should be kept patent. In addition, Moreira 2023[22] recommend the administration of supplementary oxygenation during the process of assessing and stabilizing the patient.

Pharmacological first line

A systematic review of randomized studies carried out by Cruickshank 2022[14] which analyzed 4 trials with 1345 participants, with the aim of assessing the effectiveness and cost-effectiveness of pre-hospital treatment, concluded that benzodiazepines are useful for the initial treatment of seizures, with no effective difference between intramuscular (IM) and intravenous (IV) Midazolam, nor is there any inferiority when comparing the effectiveness of IM Midazolam with IV Lorazepam. Therefore, Moreira 2023[22] recommend Diazepam 10mg IV, at a dose of 5mg/min, or Midazolam 10mg IM. Tomazini 2023[25] recommend Diazepam IV at a maximum dose of 10mg/dose and repeating the dose after 5 minutes in the event of ineffectiveness. Additionally, they

also mention IV lorazepam at a maximum dose of 4mg, which can be repeated every 5 to 10 minutes in the event of ineffectiveness. Consequently, IV Diazepam, IM or IV Midazolam and IV Lorazepam, at the recommended doses, are effective choices as a first-line approach.

Pharmacological second line

If seizures persist after the first line of drugs, Castro 2023[24] recommend using intravenous anticonvulsant drugs. Ladeira 2022[20] recommends repeating the infusion of Lorazepam at a maximum of 0.1mg/kg, if this has already been the first-line drug, or starting the infusion of Phenytoin or Fosphenytoin at 20mg/kg at a rate of 50mg/min. With regard to the use of these medications, a prospective observational study carried out by Mamta 2023[19] with the aim of comparing seizure control time when using Phenytoin or Fosphenytoin, with 121 patients in the Phenytoin group and 124 in the Fosphenytoin group, concluded that seizures were stopped in less than half the time in the Fosphenytoin group compared to the other group, despite an increased recurrence.

Ladeira 2022[20] also proposes the possibility of using Valproic Acid as a second line, at a dose of 20 to 40mg/kg, administered over 10 minutes, with the 20mg/kg dose being repeated in 5 minutes in case of ineffectiveness. Valproic acid showed promise in the randomized double-blind trial conducted by Sharshar 2023[18] with 245 patients, with the aim of determining whether this medication is applicable in

the treatment of status epilepticus. The study inferred that Valproic Acid would be a good treatment option for the current illness, despite not increasing the hospital discharge rate. In addition to the medications mentioned above, Moreira and Pinto 2022[17] point to the use of Lacosamide 200 to 400mg IV, as it is promising, despite the lack of studies, or the use of Phenobarbital at a dose of 15 to 20mg/kg, at an infusion rate of 50 to 100mg/min if the other medications presented are unavailable.

It is clear that several medications can be used as a second line of treatment, and any of the medications and their respective doses mentioned above can be chosen, depending on the patient's clinical status.

Pharmacological third line

After the use of second-line drugs, if seizures persist, Tomazini 2023[25] recommend the use of continuous infusion drugs, such as Midazolam (0.2mg/kg IV bolus, followed by 0.05 to 2mg/kg/hour in an infusion pump), Propofol (1 to 2mg/kg IV bolus, followed by 30 to 200mcg/kg/min in an infusion pump) and Thiopental (2 to 7mg/kg IV bolus, followed by 0.5 to 5mg/kg/hour in an infusion pump). In this regard, Chiu 2022[16] in a multicenter observational cohort study, when analyzing 385 cases of refractory status epilepticus treated with Midazolam and Propofol, with the aim of proving whether both are effective, between January 2015 and December 2018, found that the prognosis with either of the two medications is comparable. Still on the

subject of the most effective drug for treatment, Gomes et al.[21] in a narrative review of the literature, aiming to propose a treatment protocol for super refractory status epilepticus, which analyzed 34 articles between 1998 and 2015, together with discussions with experts in the field, state that the drugs with the highest level of evidence are Propofol, Midazolam, Thiopental and Ketamine, which should be used in combination with anticonvulsant drugs.

At this stage of treatment, Moreira 2023[22] recommend transfer to the Intensive Care Unit (ICU), together with ventilatory support and, according to Ladeira 2022[20], electroencephalogram (EEG) monitoring, which will be discussed later. That said, Costa 2023[23] recommend 100% oxygenation before orotracheal intubation, recommending the use of Etomidate at a dose of 0.3mg/kg or Ketamine at a dose of 1.5mg/kg, especially in patients in shock. The authors also mention the efficacy of Propofol, at a dose of 1.5mg/kg, despite the lack of evidence. The authors also recommend the use of Succinylcholine for neuromuscular blockade, to facilitate reassessment in the absence of EEG, as it has a short half-life and should be used at a dose of 1.5mg/kg. Finally, they give preference to the use of Midazolam, at a dose of 0.05 to 0.2mg/kg/h, and Propofol at a dose of 1 to 5mg/kg, if continuous sedation is necessary. The importance of Ketamine, reinforced by Tomazini 2023[25], should be clarified here, as it can be administered as a bolus of 2mg/kg, followed by 1.5 to 5mg/kg/hour in an infusion pump, for cases of super refractory status epilepticus.

There is a clear need for continuous EEG monitoring, ventilatory support and transfer to the intensive care setting if a third-line approach is required. Preference should be given to Propofol, Midazolam, Thiopental, as well as Ketamine, especially in super refractory status epilepticus.

Regarding the use of EEG

As previously stated by Ladeira 2022[20], and a conduct reinforced by Moreira 2023[22] and Tomazini 2023[25], EEG monitoring becomes essential for disease control. A retrospective descriptive observational study conducted by Quintana 2020[13], with the aim of assessing the usefulness of EEG in the ED, by analyzing clinical data between 2018 and 2019 from patients admitted to the ED or other hospital sectors who underwent the examination, inferred that it is a useful examination in the department, even when there is a normal computed tomography (CT) or magnetic resonance imaging (MRI) result, given its aid in clinical management. In addition, a clinical trial of emergency treatment, which included 278 patients out of 475 in the ESETT study (The Established Status Epilepticus Treatment Trial), carried out by Zehtabchi 2020[15], in order to test the hypothesis that patients with status epilepticus resistant to benzodiazepines have a residual occurrence of electroencephalographic seizures in the first 24 hours, proved that patients can maintain electrographic seizures, even without clinical presence, making clear the previous support with EEG. Another retrospective observational cohort study aimed at

describing the neurologist's experience with emergency EEG, conducted by Miró 2018[10], including 135 EEG examinations, proved that it is a considerable test for the diagnosis of non-convulsive status epilepticus.

It can clearly be said that the EEG plays a fundamental role in patients with seizures and should be carried out in the scenarios recommended above. In addition, the hospital neurology department should be used for this monitoring support.

Once the work had been discussed, a seizure treatment flowchart was drawn up for non-pregnant adults in the ED of the hospital in question, as shown in Figure 2.

CONCLUSION

That being said, it is clear that the approach to patients in seizures in the ED lacks many resources for their control. This study has shown that a proposal for a care protocol for this type of emergency is necessary, as it often requires various medications and actions on the part of the hospital team in order to improve medical care and prognosis. It therefore highlights the imperative need for further studies on the subject, elucidating more clearly the most effective drugs for controlling crises.

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