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HOSPITAL NEUROLOGY IN: SANTA CASA DE MISERICÓRDIA DE VITÓRIA (HSCMV)

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Abstract: According to the Department of Informatics of the Unified Health System (DATASUS), the group of diseases of the circulatory system is the main cause of death in the state of Espírito Santo in 2021, with a total of 7208 deaths. Of these, 1820 (25.24%) are related to cerebrovascular diseases. Furthermore, neurological diseases cause a subsequent impact resulting from possible sequelae, increasing public health costs, length of stay and complexity in monitoring these patients. Understanding the impact of the epidemiological data mentioned above and associated with the current level of complexity of the neurology service at Hospital Santa Casa de Misericórdia de Vitória, the location used as a reference in this work, a study is necessary with the objective of collecting data related to inter-consultations neurological, in order to demonstrate the impact of hospital neurology in multiple medical areas. The objective was based on tracing an epidemiological profile based on the collection, recording and analysis of data from neurological consultations requested at the Hospital Santa Casa de Misericórdia de Vitória (HSCMV) over a period of one year. This is a primary, retrospective, observational, cross-sectional, descriptive study, carried out in a single center. It is based on data collected from the HSCMV neurology service's own database combined with information from patients' electronic medical records checked during hospital consultations at that service. It was concluded that the predominance of cerebrovascular diseases is in accordance with national and global literature and can be attributed to the contribution of modifiable risk factors such as physical inactivity, dyslipidemia, high blood pressure, diabetes mellitus and smoking. Furthermore, knowledge of the prevalence of such conditions related to hospitalization must be used in order to develop strategies to prevent complications and treatment associated with hospital stays.
Keywords: consultation; neurology; neurological assessment; second opinion.

INTRODUCTION

According to the Department of Informatics of the Unified Health System (DATASUS), the group of diseases of the circulatory system is the main cause of death in the state of Espírito Santo in 2021, with a total of 7208 deaths. Of these, 1820 (25.24%) are related to cerebrovascular diseases, namely: cerebral infarction, intracerebral hemorrhage, unspecified cerebrovascular accident (CVA), sequelae of cerebrovascular diseases, subarachnoid hemorrhages, other cerebrovascular diseases and non-traumatic intracranial hemorrhages.

Furthermore, it is worth highlighting the impact of diseases of the nervous system, such as epileptic syndromes, neurocognitive disorders and infections of the central nervous system (CNS), which contribute to increased length of stay, cost and complexity of follow-up. to these patients, who usually present severe and disabling neurological sequelae.

In this sense, it is worth analyzing the context of the Hospital Santa Casa de Misericórdia de Vitória (HSCMV), which, according to the SUS classification, is a specialized institution at tertiary level, and is therefore highly complex and the reference hospital for a large number of pathologies in greater Vitória, such as, for example, acute coronary syndrome. In this context, patients are assisted by different specialties, and they are subject to possible complications inherent to different procedures or the hospitalization itself, including neurological ones.

However, the institution does not have a highly complex specialized neurology service, but rather an intermediate level, responsible for assistance in cases of diagnostic doubt by attending physicians from other specialties

through hospital consultations. In this sense, there is an urgent need to demonstrate the epidemiological profile of this hospital neurology and evaluate its use in HSCMV.

HYPOTHESES

a) The neurological consultation service generates a positive impact on the monitoring of hospitalized patients;
b) The profile of patients and procedures at the hospital makes the work of hospital neurology essential;

GOALS

PRIMARY GOAL

To analyze the clinical epidemiological profile and the prevalence of pathologies evaluated in neurological consultations at HSCMV.

SECONDARY OBJECTIVE

a) Point out areas of diagnostic doubt in other specialties.
b). Highlight the importance of the opinion service.
c). Evaluate the efficiency of the HSCMV neurology service.

METHODOLOGY

STUDY DESIGN

The present work is a primary, retrospective, observational, cross-sectional, descriptive, non-controlled, non-randomized study, carried out in a single center. It is based on data collected from patients' electronic medical records in the Hospital Santa Casa de Misericórdia de Vitória system.

It will be prepared for a Course Completion Work (TCC) and subsequent publication in a scientific journal. Data preparation and analysis will be carried out after approval by the Ethics and Research Committee (C.E.P.).

SELECTION OF PARTICIPANTS

All patients hospitalized at HSCMV who require a second opinion from a neurologist will be selected to carry out the research, where the opinion was requested between March 3, 2022 and March 3, 2023, for acute neurological complications during hospitalization. Patients with non-neurological complaints and those with chronic pathologies who must be monitored on an outpatient basis will be excluded from the research.

USED TOOLS

The information will be collected via the hospital's electronic medical record.

APPLICATION OF INSTRUMENTS

The data will be collected from July to August 2023 through the electronic medical records system installed on the hospital's computers and analyzed in a Microsoft Excel spreadsheet and submitted to online statistical analysis software.

RISKS

The preparation of this study involves the risk of breach of confidentiality (any data that could identify the patient and be publicly exposed). To minimize this risk, the data used will only be transmitted after analysis and statistical grouping, and direct information on any data that could identify patients such as name, code name, initials, individual records, postal information, telephone numbers, email addresses, etc. will not be disclosed. photographs, figures, morphological characteristics (body parts), among others, will be used without your authorization. The researchers of this research are committed to the confidentiality of data and patient identity.

BENEFITS

This work is advantageous, as it highlights

the positive impact generated by the HSCMV neurological opinion system, positively valuing the service of the neurological consultation system. Furthermore, greater knowledge is needed about the prevalence of neurological diseases in hospitals. It is hoped that with this study, more research will be carried out in the future.

PRIMARY OUTCOME

To describe the profile of neurological consultations through prevalence analysis in order to elucidate the most frequent pathologies, the effectiveness of the service and the outcomes of neurological complications in hospitalized patients. Thus, enabling the development of specific protocols and conduct, in addition to allowing the development of future research to enrich understanding of the topic.

SECONDARY OUTCOME

Increase neurological knowledge of other specialties and thereby speed up possible neurological and non-neurological diagnoses, reduce requests for unnecessary exams and neurological opinions for issues that could be resolved directly by the assistant specialty.

DATA ANALYSIS

Independent variables such as gender, age, response time to opinion, diagnostic hypothesis and outcome will be grouped in a Microsoft Excel spreadsheet. From this, the Biostat software version 5.3 will be used to obtain the mode, mean and median value of the variables: gender, age and response time to the opinion. The diagnostic hypothesis will be evaluated in order to obtain the prevalence of each neurological pathology listed, with each pathology and its appropriate frequency being listed. Finally, the outcome variable will be created according to the conduct guided at the time of the opinion and the evolution of the case after the moment of analysis.

ETHICAL IMPLICATIONS

The study followed the recommendations of Resolution 466 of 2012 of the National Health Council (CNS) and was approved by the Ethics Committee for Research with Human Beings (CEP) of EMESCAM.

RESULTS

All opinions carried out by the HSCMV neurology service in the period between March 3, 2022 and March 3, 2023 were analyzed, totaling 151 interconsultations, of 123 different patients, 63 women and 60 men, with ages ranging from 18 to 91 years old. The average response time to opinions was 1.6 days and the mode was 1 day. As for the hospitalization bed, 87 were in an infirmary bed, 14 were admitted to the emergency room and 50 were in intensive care beds.

	Gender		
	Frequency	Percentage	Valid percentage
Female	63	41,7	51,2
Male	60	39,7	48,8
Total	123	81,5	100,0
Repeated	28	18,5	
Total	151	100,0	

AGE

The age of patients was stratified, according to the WHO classification, into 5 groups: 15 to 24, 25 to 44, 45 to 59, 60 to 74 and those over 75 years old.

Age

	Frequency	Percentage (%)	Cumulative percentage (%)
Young (15-24 years)	8	6,5	6,5
Adult (25-44 years)	11	8,9	15,4
Middle-age (45-59 years)	31	25,2	40,6
Elderly (60-74 years)	43	35,0	75,6
Elders (> 75 years)	30	24,4	100
Total	123	100	

	Average	Standard deviation	Median	Minimum	Maximum
Age	60,0	17,8	62,0	18,0	91,0

RESPONSE TIME TO OPINION

The HSCMV neurology service operates from Monday to Friday, in the afternoon, in outpatient clinics attached to the hospital structure. When a consultation is requested, the neurologist responsible for that day's outpatient clinic evaluates the patient after the outpatient consultations have concluded. Therefore, opinions requested during weekends and holidays, where there is no outpatient care, may have their evaluation extended to the next business day.

Response Time

Days	Frequency	Percentage (%)	Cumulative percentage (%)
0	49	32,5%	32,5%
1	51	33,8%	66,2%
2	21	13,9%	80,1%
3	16	10,6%	90,7%
Over 3 days	14	9,3%	100%
Total	151	100,0	

	Average	Standard deviation	Median	Minimum	Maximum
Response Time	1,6	2,1	1,0	0,0	11,0

SYNDROMIC DIAGNOSIS

At the end of each consultation, the responsible neurologist develops a diagnostic hypothesis together with a suggested course of action. In order to better analyze them statistically, the diagnostic hypotheses were grouped into syndromic diagnoses. The intention was to group pathologies with similar risk factors, in order to enable the identification of modifiable variables related to neurological complications. Depending on the symptoms presented by the patient, or the severity of their clinical condition, sometimes it was not possible to establish only 01 syndromic diagnosis at the time of consultation, therefore, in some cases it was necessary to establish more than one syndromic diagnosis.

Syndromic Diagnosis	Number of Opinions	Frequency
Vascular Syndromes	49	25,51%
Epileptic Syndromes	32	16,67%
Neuropsychiatric Disorders	16	8,34%
Neoplasms of SNC[1]	14	7,29%
Peripheral neuropathy	10	5,26%
Cranial nerve syndrome	9	4,68%
Infections of SNC[1]	8	4,17%
Pain syndrome	6	3,12%
Medication-Related Disorders	6	3,12%
Intracranial Hypertension Syndrome	4	2,08%
Medullary Syndrome	4	2,08%
Polirradiculoneurite	4	2,08%
Síndrome Meníngea	3	1,56%
Síndrome de Wernicke-Korsakoff	3	1,56%
Demyelination Syndrome Osmotic	3	1,56%
Vestibular Syndrome	3	1,56%
Trauma (TCE[2])	3	1,56%
Miscellaneous	15	7,8%
	SOMA:192	SOMA: 100%

[1] Central Nervous System; [2] Traumatic brain injury.

The miscellaneous group, on the other hand, is in last position in descending order due to being composed of different syndromes that presented at a low frequency, varying from one to two occurrences, namely pyramidal, parkinsonian, hyperkinetic, aphasic, alien hand, amnestic, ataxic, foot drop, emetic and meningoencephalic.

SUGGESTED CONDUCT

Based on the evaluation and interpretation of the case, the responsible neurologist organizes a suggested course of action for the requesting physician. Such a suggestion could consist of new complementary exams, starting or stopping medications, instructions on how to proceed in the face of possible complications of the condition and opinions without neurological management. Depending on the suggested approach, in some cases, it was necessary to reevaluate the patient in light of the new information obtained. Therefore, some patients were evaluated more than once, some for reevaluation after carrying out a proposed procedure, others due to the emergence of a new complaint or complication. Given the variety of suggestions, the behaviors were grouped for later evaluation, as shown below:

1. Drug Therapy;
2. Complementary Exams;
3. Guidelines;
4. No Neurological Conduct.

The same opinion can vary from 0 to 3 in relation to the number of suggested procedures, that is, it corresponds to 0 when no specific intervention was suggested by the neurology team and to 3 when all other groups were used. The total number of suggested procedures was 248 and the number of opinions without neurological management was 10.

	Frequency	Percentage	Cumulative Percentage	Single Intervention
Complementary Exams	93	37,50%	37,50%	22
Medications	82	33,07%	70,57%	21
Guidelines	73	29,43%	100,00%	8

REQUESTING SPECIALTY

From the analysis of medical records, it was possible to identify the specialty requesting each opinion.

Requesting specialty

	Frequency	Percentage
Medical clinic	56	37,1
Intensive therapy	45	29,8
Oncology	15	9,9
Hematology	11	7,3
Gastroenterology	8	5,3
Cardiology	6	4,0
General surgery	6	4,0
Geriatrics	4	2,6
Total	151	100,0

DEATHS

Regarding deaths, only deaths that occurred within the HSCMV were recorded and the number of days that elapsed between the request for a neurological opinion and death was quantified. With a total of 123 patients, 38 died (31%) and 10 patients were described as "unknown" (10%), characterizing hospital transfers, opinions canceled before a response, absence of record in the medical record and request for an inadequate opinion. The remaining patients (75) had different outcomes, except death. The maximum number of days between the opinion request and death was 156 days and the minimum number of days between the opinion request and death was 3 days.

Deaths		
	Frequency	Percentage
No	75	61
Yes	38	31
Unknown	10	8
Total	123	100

OUTCOMES

With the purpose of establishing the different outcomes of each patient analyzed, a grouping was carried out with 6 possible situations: hospital discharge, transfer from the Intensive Care Unit (ICU) to the ward, transfer from the ward to the ICU, hospital transfer, death and unknown. As already mentioned, 38 patients died, there were 7 hospital transfers after carrying out the neurological opinion, 14 transfers from the ICU to the ward, 1 transfer from the ward to the ICU, 60 hospital discharges without changing the type of bed during hospitalization and 3 patients described as "unknown" (absence of description in the medical record, request for an opinion canceled or request for an inadequate opinion).

ADMISSION BED

From the analysis of medical records and data collected at the time of the opinion, the type of hospitalization bed where the evaluated patient was located at the time of the examination was identified.

Hospital bed		
	Frequency	Percentage
Nursery	87	57,6
UTI	50	33,1
Emergency Room	14	9,3
Total	151	100,0

DISCUSSION

HSCMV does not have its own ward for neurological patients, therefore, the present study aims to analyze the occurrence of neurological complications presented by primarily non-neurological patients. This way, it is possible to identify the most prevalent conditions, the patient profile and obtain an overview of neurology in the hospital.

In terms of age, it is noted that the vast majority of patients (more than 80%) were 44 years old or older at the time of evaluation, the age group that comprises the most patients evaluated was the elderly (60 to 74 years old), representing for 35.0% of patients, the average was 60 years old and the median was 62 years old.

Regarding the response time for the opinion by the neurologist at HSCMV in relation to the day on which it was requested by another specialty, it appears that 32.5% of the times the opinion was responded to on the same day of its request. And, in a cumulative analysis, the majority were answered within the next day (66.2%) and 90.7% were answered within 3 days. The average waiting time was 1.6 days and the median were 1 day.

The specialties that were most in contact with neurological complications were the medical clinic, with 56 (37.1%) opinions, and intensive care, with 45 (29.8%), representing, together, more than 60% of the interconsultations carried out.

Regarding the type of hospital bed in which the patient was located at the time the attending physician requested the opinion, the majority, 87 patients (57.6%), were admitted to an infirmary bed, while 50 (33, 1%) were in ICU beds and the remainder, 14 patients (9.3%), in emergency beds in the Emergency Room.

Regarding the syndromes presented, the most prevalent were vascular syndromes (25.51%), followed by epileptic syndromes (16.67%), neuropsychiatric disorders (8.34%) and, in fourth place, CNS neoplasms. (7.29%).

The group of vascular syndromes, the most common of the syndromes, presents stroke

as the main presenting problem. This data is in line with what was postulated by the GBD 2016 Neurology Collaborators (2019) group, which highlights cerebrovascular diseases as the second largest cause of mortality and the main cause of morbidity in the world between the years 1990 and 2016. Furthermore, in this group also These include PRES syndrome, motor deficit syndrome, sensory deficit syndrome, intraparenchymal hemorrhage, epidural hematoma, subdural hematoma and spinal cord infarction.

Next, dealing with epileptic syndromes, the most common complication was the occurrence of acute symptomatic seizures in previously non-epileptic patients, followed by escape seizures in epileptic patients and "status epilepticus". It is believed that this complication is mainly due to organic changes in the CNS presented by patients hospitalized at HSCMV, such as neoplasms, stroke, infections and is also due to the imbalance of epileptogenic factors such as initiation or withdrawal of medications, hydroelectrolyte disorders and interruption of antiepileptic drugs. (DAE) for prior use.

In third place is the group of neuropsychiatric disorders, made up of disorders of the level or content of consciousness, the most common of which is delirium, followed by lowering of the level of consciousness, the minimally conscious state and encephalopathies. Such disorders are associated with increased morbidity and mortality, longer hospital stays, higher hospital costs and cognitive impairment that persists even after hospital discharge.

Frailty and other pre-existing comorbidities worsen the course of the disease and, in combination with immobility, the hospital environment and drugs, contribute to the development of delirium and its long-term complications.

The group of CNS neoplasms has a higher prevalence when compared to global statistics (FEIGIN, Valery L. et al. Global, regional, and national burden of neurological disorders, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. The Lancet Neurology, v. 18, n. 5, p. 459-480, 2019), gaining prominence as the fourth main reason for requesting opinions, with an almost equal incidence of tumors that have the CNS as their primary site and metastases in the CNS of distant tumors. It is possible that the prevalence of such conditions may be related to the fact that HSCMV has a structured clinical oncology service.

The miscellaneous group is of great importance, as, added to the rest of the conditions mentioned, it denotes the great diversity of the service, which was in contact with 30 different syndromes when evaluating neurological complications in hospitalized patients over a period of 12 months. Furthermore, if it were not for a combination of other syndromes, it would be ranked as the third main reason for requesting opinions, with 15 (7.8%) of them.

With regard to suggested procedures, there were 248 behaviors in total, since, in the same opinion, there may be more than one suggestion by the neurologist, including requests for new complementary tests, changes to the medication regimen and guidance on how to manage the condition, with the exception of 10 opinions without neurological management. The recommendation to perform tests, such as computed tomography, resonance and electroencephalogram, was the most suggested (37.5%), being presented in 22 opinions as a single procedure. On eight occasions, the only approach was to provide guidance regarding possible complications in the patient's condition, without the need for new additional tests or changes in the medication regimen.

When evaluating the outcome, around 31%

of patients died, which may be associated with the degree of severity of neurological patients, 75 patients (61%) were medically discharged, and of this proportion, a significant portion were referred for outpatient neurological follow-up by the patient themselves. hospital, in which 16 of these patients attended for at least one consultation. Around 12% of hospitalized patients moved between the ward, ICU or Emergency Room (ER) and 7 patients were transferred to an external ICU, ward of another health service or to long-stay beds.

CONCLUSION

The predominance of neurological complications in elderly patients may be related to the higher prevalence of risk factors and comorbidities in this age group, such as hypertension and diabetes. Furthermore, it is worth highlighting the influence of factors related to aging itself, such as increased vascular stiffness, the presence of lipid deposits in arterial walls, polypharmacy, the increased incidence of neoplasms in these age groups and a sedentary lifestyle.

The predominance of cerebrovascular diseases is in accordance with national[1] and global[2] literature and can be attributed to the contribution of modifiable risk factors such as sedentary lifestyle, dyslipidemia, high blood pressure, diabetes mellitus and smoking.

The occurrence of epileptic syndromes may be related to factors during hospitalization that are known to lower the convulsive threshold, such as interruption of commonly used antiepileptic drugs, underlying diseases, infections, drug interactions, structural changes in the CNS and fluid and electrolyte disorders. Furthermore, it is important to highlight that a Brazilian study, through the analysis of data taken from DATASUS, points out that the southeast is the Brazilian region with the most hospital admissions due to epilepsy in the period from 2010 to 2018. ("Hospitalization for epilepsy treatment does not controlled: characterization of the health service | Revista Educação em Saúde", [n.d.])

Knowledge of the prevalence of such problems related to hospitalization can later be used to plan the use of technical and financial resources, develop specific treatment protocols, purchase new drugs and estimate the number of professionals needed to deal with such complications.

Finally, it is worth noting that, as it is a primary and cross-sectional study, new studies are necessary to further explore the topic and confirm the hypotheses formulated here.

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