



Analysis of the etiological investigation of stroke: A literature review

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Abstract

Cerebrovascular accident (CVA) is clinically defined as a neurological deficit, usually focal, of sudden onset or rapid evolution, with no apparent cause other than vascular, lasting more than twenty-four hours or, when shorter, leading to death. Among the vascular causes are alterations in the structure and function of the vessels, related to blood flow and the coagulation system. The aim of this study is to investigate the etiology of this event. It is a qualitative-quantitative, retrospective study with clinical research on stroke in Brazil, searching the following databases: Pubmed, Scielo and Lilacs, in Portuguese and English. Stroke is the leading cause of death in Brazil, with a high prevalence and kinetic value, while worldwide it is the second leading cause of death (around 11% of all deaths). This event is classified as ischemic or hemorrhagic, and its etiology is vast. That's why it's essential to determine the etiology of the event, in addition to determining the appropriate treatment for secondary prophylaxis and rehabilitation measures.

Keywords: Pain; Osteoarticular pain; Chronic pain; Mental health; Psychological

Introduction

Cerebrovascular accident (CVA) is clinically defined as a neurological deficit, usually focal, of sudden onset or rapid evolution, with no apparent cause other than vascular, lasting more than twenty-four hours or, when shorter, leading to death (Porto, 2015) ^[16]. Vascular causes include alterations in the structure and function of the vessels, related to blood flow and the coagulation system (Porto, 2015) ^[16].

Some of the most common signs of stroke that occur in adulthood are sudden weakness or numbness in the face, arm and/or leg, which usually affects only one side of the body (Ministério da Saúde, 2013) ^[11]. During the crisis, the individual may also experience mental confusion, cognitive impairment, difficulty speaking or understanding, seeing and walking, dizziness and a severe headache with no known cause (Ministry of Health, 2013).

Stroke is a very prevalent disease, especially in individuals over the age of 40. It is the second leading cause of death and hospitalization in Brazil and worldwide, and its incidence increases from the age of 65 (Ministry of Health, 2013). The aim of this study is to carry out an investigative analysis of the etiology of stroke.

Method

This study is a qualitative-quantitative, retrospective clinical investigation of therapeutic approaches to STROKE in Brazil, in which the information was obtained from the PUBMED, LILACS and SCIELO online databases. As this is a public domain database, it was not necessary to submit the project to the Research Ethics Committee (Furtado *et al.*, 2014; Benini *et al.*, 2022). The terms "stroke", "cerebrovascular accident", "brain", "hemorrhagic stroke" and "ischemic stroke" were chosen from the Health Sciences Descriptors platform at <<https://decs.bvsalud.org/>>. The research presents health data and involves the category of treatment instituted in cases of back pain.

Inclusion criteria

The criteria for including the articles were: studies that include the treatment and prognosis of patients diagnosed with back pain; studies that are more than 10 years old; articles whose titles and abstracts are related to the theme proposed by the study; articles in Portuguese and English

Exclusion criteria

The exclusion criteria were articles that were not related to the research topic; articles whose language differed from those mentioned above.

Results

Given the numerous risk and causal factors of stroke, whether ischemic or hemorrhagic, its high prevalence is a fact, since a large part of the world's population has: hypertension, diabetes, hypertriglyceridemia, overweight or obesity, smoking, alcoholism, sedentary lifestyle, drug exposure, in addition to the increase in life expectancy in recent years (Batista *et al.*, 2012; Oliveira *et al.*, 2010; Carreira *et al.*, 2018)^[3, 6].

Its epidemiological profile varies according to the cause: hemorrhagic strokes account for 15% of cases and ischemic strokes 85%. This discrepancy can be explained by the pathophysiology of the disease, which is commonly linked to arterial obstruction and cardioembolic factors (Longo *et al.*, 2013; Adams *et al.*, 1993; Anderle *et al.*, 2019)^[9, 1].

The Civil Registry Transparency portal, maintained by ARPEN Brasil (National Association of Natural Persons Registrars), indicated that the number of deaths from strokes in Brazil in 2020 was 101,965 in 2019 and 102,812 in 2020. This means that in 2022, from January 1 to October 13, 87,518 Brazilians died. This figure is equivalent to an average of 12 deaths per hour, or 307 fatalities per day, making stroke once again the leading cause of death in the country with a high prevalence and scientific value (Correia *et al.*, 2018; Costa *et al.*, 2008; Ministério da Saúde, 2013; Minelli *et al.*, 2007)^[5, 6, 11, 12].

Nationally, until the 2015s it was the leading cause of death in our country, then it moved to second place, similarly to what we see in the rest of the world and in more developed countries, and again in 2022 it returned to first place in mortality in our country. And 12.2 million incident cases of stroke were recorded, with 6.55 million deaths. Globally, stroke is the second leading cause of death (around 11% of all deaths). In Brazil, this ratio (AMI/Stroke) was inverse, with the disease moving to second place only in recent years, starting in 2016 (Ministry of Health, 2013; Cabral *et al.*, 2009; Minelli *et al.*, 2007)^[4].

Discussion

Strokes can be classified as ischemic (ischemic stroke) or hemorrhagic (hemorrhagic stroke) (Ministry of Health, 2013). As for the etiology of stroke, it can be divided into: atherosclerosis in large arteries, cardioembolism, occlusion of small arteries (lacunae), other well-determined causes (such as arterial dissection, thrombophilia) and cryptogenic. In terms of the way they occur, strokes can also be classified based on the site of the hemorrhage, as intraparenchymal (IPH) and subarachnoid (SAH) (Porto, 2015)^[16]. Each of the subclasses has a different pathophysiology, requiring a different approach in each of them, in order to reduce sequelae and increase the patient's chances of rehabilitation.

In CVA, a cerebral vessel ruptures, causing blood to leak out (Ministry of Health, 2013). The main causes of stroke are uncontrolled hypertension, ruptured aneurysms, hemophilia, arteriovenous malformations, amyloid angiopathy, tumors, among others (Ministry of Health, 2013).

During a CVA, there is an acute occlusion of an intracranial vessel that reduces blood flow to certain areas of the brain (Longo, *et al.*, 2013)^[9]. Cardioembolic strokes occur due to an embolism of thrombotic material that originates in the wall of the arteries, ventricles or valves, which detaches and ends up in the arterial circulation. In stroke caused by occlusion of small arteries, an infarction occurs after atherothrombotic or lipohyalinotic occlusion of a small artery (Longo *et al.*, 2013)^[9]. Atherothrombotic strokes are the result of a disease that leads to the formation of plaques in the larger blood vessels, interrupting the passage of blood in the blood vessels or the formation of emboli (Ministério da Saúde, 2013)^[11]. Another type of stroke is cryptogenic, which occurs when the cause has not been identified by the medical team (Ministry of Health, 2013).

An etiological classification of ischemic strokes has been drawn up, called TOAST, which classifies strokes into 6 causes: 1-atherosclerosis of the great arteries, 2-cardioembolism (excluding cases attributed to PFO/AIA), 3-occlusion of a small vessel (lacunar), 4-IAV of another etiology, 5-two or more identified causes and 6-cryptogenic AVCI. (PFO - patent foramen ovale; ASD - atrial septal defect; CVA - ischemic stroke (Adams *et al.*, 1993)^[9]

Anderle *et al.* point out that approximately 90% of people who survive a stroke are left with functional sequelae and only between 5% and 20% of patients achieve complete functional recovery (Anderle *et al.*, 2019)^[1], which makes this disease of great importance for public health, and its accurate diagnosis and treatment are essential for the good quality of life of patients affected by it. In view of this, it is essential for proper care, prognosis and correct and efficient diagnosis for the patient, as well as scientific dissemination to the population about the causes and risk factors, thus aiming to promote a good quality of life and effective health care for patients, as well as clarification for their families.

Conclusion

In this context, it is of fundamental importance to determine the etiology of strokes and thus determine treatment for adequate secondary prophylaxis, as well as rehabilitation measures. With this in mind, the main focus of this project is to study the prevalence of complete etiological diagnoses in stroke cases in the municipality of Salvador (Bahia) by analyzing medical records and trying to establish their causes. The study is necessary in order to assess the effectiveness of diagnostic methods and the etiological classification of strokes, which is fundamental for guiding the choice of therapeutic treatment. In addition to evaluating from the patient's point of view what problems they face in the face of diagnostic procedures and treatment.

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