

# THE IMPACT OF BRAIN VASCULAR ACCIDENT ON SOCIETY AND THE RELEVANT ASPECTS OF ITS CLINICAL APPROACH

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## INTRODUCTION

Stroke, a process that poses great risks to life, is a phenomenon analyzed since the beginning of human history, but it worsened after the historical period called sedentary lifestyle, in which man ceases to be a nomad and starts to live fixed. to a location.

From this perspective, research on stroke became more evident from the 20th century onwards, bringing several discoveries about the causes, aggravating factors and consequences of its action in the body.

Stroke results from neurological failures that can be momentary or even permanent, of various intensities, which can somehow disrupt the individual's life, impairing their independence in carrying out daily activities (Brito & Rabinovich, 2008).

In view of this question, the objective of the research is to demonstrate why the study and knowledge of the characteristic symptoms of a stroke can be essential to save several lives, not only in medical practice, but in the daily life of any human being.

Regarding the methodology, it is a qualitative study, based on bibliographic research and field study. To this end, a survey was carried out in databases (Medline, Scielo, MedScape, PubMed, ...) on websites of organizations (Inca, Ministry of Health) and institutions interested in the investigated topic, as well as in texts by scholars in the field in reference books.

The present research is justified by the fact that it will contribute to our medical performance in the health scenario, because through it the population will be able to prevent themselves and know how to act in the course of a situation similar to the case reported.

## DEVELOPMENT

### DEFINITION OF STROKE

It is a type of injury that occurs in the head,

which can leave serious sequelae, depending on the degree of intensity, it can even lead to death. However, they are more common in adults and more likely to be incapacitated. There are two types of cerebrovascular accidents (CVA), as indicated by Moore, Dalley and Agur (2017):

- **Ischemic:** occurs due to the sudden occurrence of focal neurological deficits that come from the decrease in cerebral blood flow, they are 85% of the cases of cerebrovascular accident. Its most common cause is the presence of an arterial embolism, due to atherosclerosis or thrombosis, causing non-oxygenation of cells in a certain region of the brain, due to obstruction of the irrigating artery, and thus causing death, a regional cell death, this way, leading to their symptoms. Another example of ischemic stroke causes is atrial fibrillation.
- **Hemorrhagic:** it is caused due to the rupture of an artery or an aneurysm, representing the other 15% of stroke cases. Usually, it occurs due to dilation of a wall of a weak artery, leading to its rupture, thus allowing blood to enter the subarachnoid space. With this, a headache, headache, intense is generated and an extreme stiffness of the back of the neck, due to the increase in intracranial pressure.

Figures 1 and 2 clearly illustrate how stroke, both ischemic and hemorrhagic, act.

Figure 1 shows the occurrence of fat deposits on the vessel walls (atheroma plaque), causing their occlusion, which characterizes an ischemic stroke.

In Figure 2, there is a rupture of a blood vessel that irrigates the brain, causing an extravasation of blood, more specifically to the subarachnoid space (between the arachnoid meninges and pia mater), causing

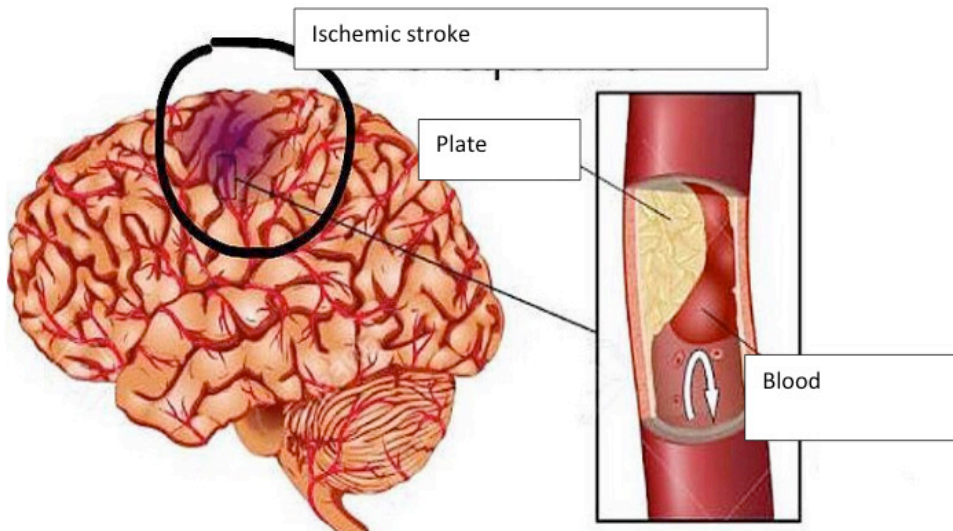


Figure 1 – Ischemic stroke caused by atheromatous plaque.

Source:<<https://www.rafaeloliveiraneuro.com/acidente-vascular-cerebral-isquemico/>>.

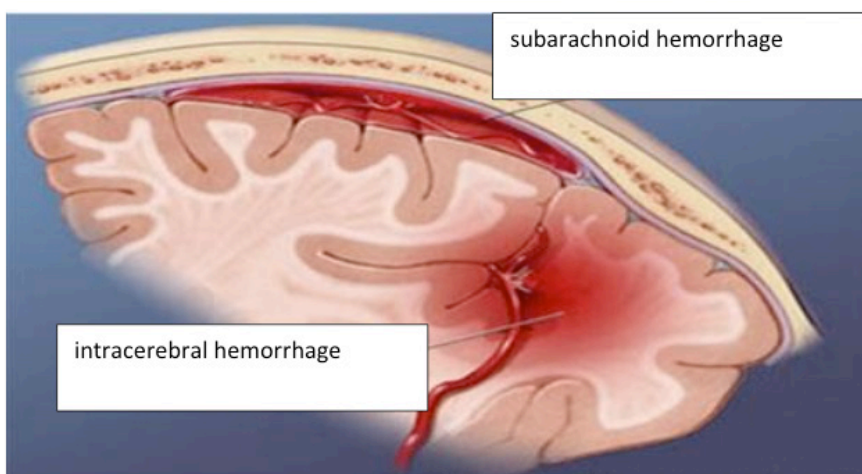


Figure 2 – Hemorrhagic stroke.

Source:<<http://www.atualizei.com/1770-avc-acidente-vascular-cerebral-sintomas/>>.

compression of the dura mater, due to an increase in intracranial pressure, causing extreme headache due to innervation of the dura mater.

## EPIDEMIOLOGY

Stroke is the third leading cause of natural death in the world's adult population, second only to cancer and heart disease, and is the first in Brazil. We have approximately one hundred thousand deaths per year (FREITAS et al., 2016).

The lack of epidemiological data added to the high incidence of stroke were determining factors to stimulate the detailed study of the health problem evidenced. For this reason, the detailed study of these data was based on the city of Joinville/SC, Brazil.

During a total period of 12 months of study, a total of 429 cases were recorded, of which 175 were women and 254 were men, with 74.5% of first-episode cases and 25.5% of recurrent episodes. From this, annual incidence rates were evaluated, by age and sex, per 100,000 inhabitants, in a first stroke episode. The data show that of these events, 13% were in people under 45 years old, 42% were in people between 45 and 64 years old and 43% were in people over 65. The incidence rate in men was higher than in women in all age groups. In patients with first-episode stroke, 235 events with cerebral infarction, about 73.4%, 59 with intracerebral hemorrhage, about 18.4%, 24 with subarachnoid hemorrhage, about 7.5% can be observed. and 2 with arteriovenous malformation, around 0.6%.

Among the risk factors mentioned above, about 79.7% of the patients had systemic arterial hypertension, 24.7% diabetes mellitus, 23.5% smoking, 9.3% alcoholism, 8.3% ischemic heart disease, 8.3% atrial fibrillation, 4.1% dyslipidemia and 1.6% oral contraceptives. The annual mortality rate by age (between 40 and 69 years) and sex, in

the first episode of stroke, shows that in all age groups, men were higher than women, reaching values more than double.

However, it can be concluded that there is a lack of wisdom/knowledge on the subject "Stroke stroke" in the population. Data show that about 9% of the 337 analyzed sought care within an hour of the onset of symptoms and about 20% (the highest percentage) sought care after 24 hours. However, it ends up causing greater damage to the population due to the precarious information, and it could be eradicated before it even starts.

## RISK FACTORS

There are modifiable and non-modifiable risk factors, the modifiable ones are those that we manage to change throughout life, with food, physical activity and medication. The non-modifiable ones are those that we cannot change and, therefore, we have to deal with them (PRIETO ALVAREZ; PIRES; CARAMÊZ, 2014).

Maintaining a healthy life is essential to reduce modifiable factors: measures such as healthy and balanced diet, daily physical exercise and maintaining a life with less stress to reduce factors such as blood pressure; thus, cutting unhealthy habits such as smoking and even alcoholism decrease the chances of causing a thrombus or a clot causing ischemic stroke. An influencing cause of smoking is that continuous cigarette use causes a greater chance of activating the coagulation cascade, since the endothelium is more rigid and with a higher coefficient of friction, since the non-modifiable they are intrinsic factors of the individual since age to sex and genetic pathologies such as in people with hereditary thrombophilia that increase the chances of an ischemic stroke by thrombus.

Therefore, among the modifiable and non-modifiable factors, the following stand out:

- Modifiable



1. Systemic Arterial Hypertension;
  2. Diabetes Mellitus;
  3. Atherosclerosis;
  4. Sedentary lifestyle;
  5. Smoking;
  6. Obesity;
  7. History of Cardiovascular Diseases;
  8. Atrial Fibrillation
- Not Modifiable
    1. Age;
    2. Ethnicity;
    3. Gender;
    4. Genetics.

### **COMPLEMENTARY EXAMS AS ADJUNCTS TO DIAGNOSIS IN THE FIELD OF IMAGING**

The tests requested by doctors, during the arrival of a patient with symptoms that generate suspicion of stroke, are computed tomography and brain resonance. However, the most efficient is resonance.

Computed tomography is a simple exam capable of obtaining grayscale images of “slices” of selected body parts or organs, which are generated thanks to the processing by a computer of a succession of high resolution X-ray images. into several successive segments of body parts or organs. (Abcmed, 2014)

Magnetic resonance imaging uses a combination of a large magnet, responsible for creating a strong magnetic field around the patient, associated with a computer that analyzes the captured radiofrequency signals, to convert them into even more detailed images than CT, for example. MRI better differentiates between normal and abnormal tissues of internal organs and structures.

BR Computed tomography offers distinct advantages because most hospital emergency rooms use CT scanners for other purposes, taking only one to two minutes to perform, and providing clear images even if the patient cannot remain perfectly still. Most hospitals

will only need to purchase software (at a relatively low cost) to update their systems and training programs.

Both Computed Tomography and Magnetic Resonance are able to provide information about the state of the cerebral parenchyma, the vessels, and the brain in stroke patients. The decision about the best method varies according to the patient’s condition and the time elapsed since the onset of the stroke. Cranial computed tomography (CT) has been the recommended imaging test and must be performed as soon as possible. It must be repeated in 24 - 48 hours in cases where no changes are evident in the initial examination or unsatisfactory evolution. Brain magnetic resonance imaging (MRI) is more positive than CT in the first 24 hours for ischemic stroke (IS), especially in the vertebrobasilar territory (Mohovic and Figueiredo, 2004).

### **DIAGNOSIS**

The symptoms, which appear suddenly or the person can wake up with them, depends a lot on the affected region in the brain, some common examples are: weakness, numbness, visual reduction, imbalance, speech alteration, paralysis of part of the body, fainting, dizziness and headache depending on the affected site. Many people associate stroke in general with headache, but headache is more related to hemorrhagic stroke cases, as there is an increase in intracranial pressure due to blood extravasation (FREITAS et al., 2016).

Having knowledge about the main symptoms of stroke is good not only for doctors, but also good for people in their daily routine. A doctor who receives a patient with a stroke, which is occurring within approximately four hours, greatly reduces the probability of sequelae to the patient. Therefore, the identification of symptoms at home is also essential so that medical activity can be more effective in this type of situation

(Faria et al., 2017).

CVA is a disease that can lead to death, or leave enormous physical, social and mental sequelae, such as difficulty in movement and communication. Therefore, immediate intervention and rapid recognition of its involvement is important. In addition, it is a disease that needs a lot of care, as the affected person loses many important functions. These difficulties generated by the disease depend on the affected area, individual recovery capacity and the level of injury (Marques & Mejia, 2016).

## TREATMENT

In addition to the clinical or surgical treatment that will be carried out by the health team at the hospital, post-hospital treatments are very important. Bearing in mind that stroke often generates sequelae, therefore, the concern with the patient's adaptation to his new reality is of great importance. From this perspective, the main post-hospital attitude is physical rehabilitation, through physical therapy and emotional, both for the patient and the family, through therapies. This way, the patient and the family will face the new reality of their lives in a more lenient way (ALVAREZ; PIRES; CARAMÊZ, 2014).

Stroke treatment must be done immediately, because the longer the disease goes on without treatment, the greater the brain damage that the affected person may have. There is a huge possibility that such damage is irreversible depending on the time interval between the occurrence of the stroke and its treatment.

After the stroke, the person must adapt to their disease, be aware of the change it will make in the person's life, and accept it. It is also crucial to integrate the person in the hospital, having a good relationship with health professionals, such as nurses. Another important issue is family support, and their continuous visit during the person's

rehabilitation is very important (Faria ACA, Martins MM, Schoeller SD, Da, & Martins, 2017).

It is also important that during treatment, the person affected by the disease is seen in an integral way, as a whole. Since one of the biggest causes of negative and harmful factors is post-stroke depression. A patient tends to feel depressed after a stroke, and it is extremely important to know how to deal with such a situation.

In fact, depression is considered the most common psychiatric complication after a stroke. Post-stroke depression (CVA) increases mortality risks, and also impairs the individual's physical and language functioning, reducing their quality of life. When you have a diagnosis and is treated CVDPA (post-stroke depression), an improvement in the recovery of the individual is observed (Clinical, 2008).

## CLINICAL CASE

M.D.G.S, A 72-year-old, brought by family members, is admitted to the Emergency Room with reports of speech and movement difficulties on the right side starting 1h30 minutes ago. Family members report that the patient has systemic arterial hypertension and is using Losartan 50mg twice a day; dyslipidemia in use of Atorvastatin 40mg 1x day. She denies allergies, diabetes and seizures.

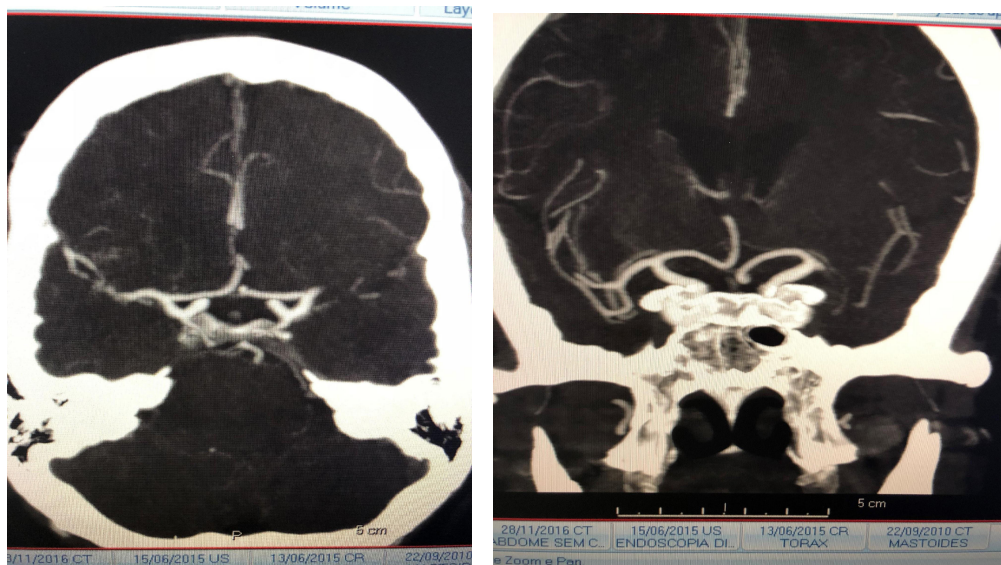
On Physical Examination: Cardiac auscultation: BNF S/S in 2T (Regular Heart Rhythm in two stages with normophonic sounds); Respiratory auscultation: MV (+) without RA (vesicular murmurs audible in all fields with no adventitious sounds). Inspection: fall of labial rhyme on the right. Blood Pressure: 180x105 mmHg, Pulse: 89 bpm, Respiratory Rate: 16 irpm, Axillary Temperature: 36.7; Capillary blood glucose: 135 mg/dl (post-prandial). Abdominal palpation: flat, normotensive, RHA + (Presence of air-fluid sounds) without visceromegaly. Limbs:

no swelling or signs of arthritis. Present pulses and free calves. Neurological Examination: Aphasic patient, right hemiplegic, Glasgow Coma Scale 11 (Ocular Opening 04 + Verbal Response of 01 + Motor Response of 06).

The Diagnostic Hypotheses were: Hemorrhagic CVA; ischemic stroke; Hypoglycemic crisis – discarded because the patient had a blood glucose level of 135 mg/dl (post-prandial); Epilepsy (post-ictal state) – however, family members deny an epileptic condition.

Computed tomography with contrast, 3D cerebral angiogram and arteriography were performed, obtaining the diagnostic finding of ischemic stroke with left middle cerebral artery obstruction, as shown in the images represented by figures 3 and 4.

As treatment, intravenous thrombolytic therapy was proposed with the use of Alteplase and later Mechanical Thrombectomy with the passage of a Stent after previous full heparinization demonstrated by figure 5.



Figures 3 – Computed Tomography images set.  
Source: Hospital São José do Avaí.

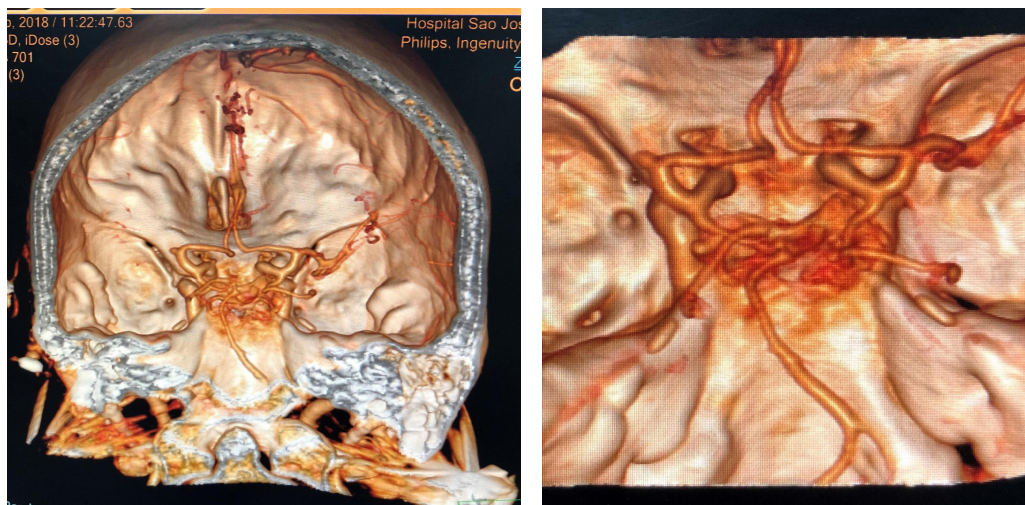


Figure 4 – 3D Angiotomography Images Set.  
Fonte: Hospital São José do Avaí.



The result of the treatment shown in figure 5 obtained through arteriography points to the total clearance of the vessel, subsequently

obtaining immediate neurological recovery of the patient.

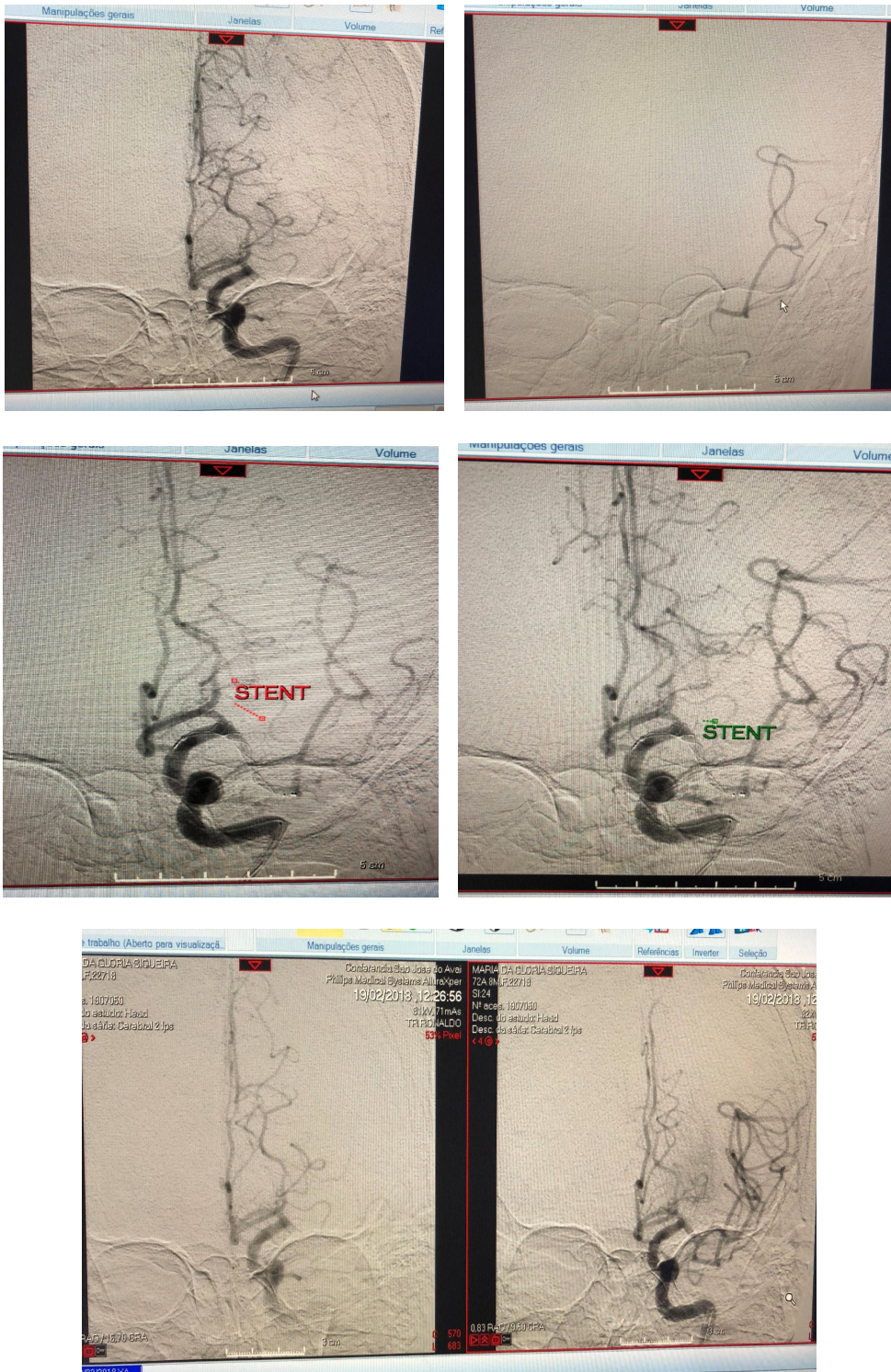


Figure 5 – Arteriography Images Set

Source: Hospital São José do Avaí.

## CONCLUSION

Stroke can cause serious life-threatening complications. It can be aggravated by decreasing physical activities in general. Keeping a healthy life is also a great way to avoid it.

Currently, with the advancement of technology, many situations no longer require physical effort from individuals, requiring less dedication to perform certain activities.

For the attempt to save lives, it is necessary to know the characteristic symptoms of the complication. In addition to knowing the

symptoms, information about the pathology must be further studied, promoting greater participation of physicians, so that they are aware of prevention and effective treatment.

This injury occurs in the head and can lead to death or sequelae. There are two types of stroke, ischemic, which occurs when blood flow to the brain decreases, and hemorrhagic, which is caused by the rupture of an artery or an aneurysm. It is an extremely serious pathology, the third leading cause of natural death in the world's adult population.

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