Clinical-radiological correlation in patients with ischemic stroke in the Emergency Hospital in the Western Amazon

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Learning objectives

The ischemic stroke is one of the major causes of death worldwide, with high prevalence in Brazil.

In Brazil, there are little data on ischemic stroke in the Amazon region.

This study aims to correlate the major risk factors for ischemic stroke with CT findings in a population in the state of Acre, northern Brazil, part of the Amazon region.
Background

- Stroke is a treatable disease that presents with rapidly developing clinical symptoms. Distinguishing pathologic stroke types is relevant both for clinical management and epidemiologic studies.
- Despite declining stroke mortality over recent years, Brazil has one of the highest stroke mortality rates in the Americas for both genders, with a higher proportion of deaths among the poorest states in the country.
- Brazil is a country of continental dimensions, with a wide range of health services that meet the population through public and private services. In the Amazon region, located in northern Brazil, most of the population is served in public hospitals.
- In the management of acute ischemic stroke, a diagnostic procedure is critically important. Brain imaging provides an objective basis for the clinical inferences that direct individual patient management in the acute stroke setting.
- Computed tomographic images are widely used in the diagnosis of stroke. Stroke imaging must, therefore, provide information beyond the presence or absence of intracranial hemorrhage (ICH) and early evidence of a large infarct. Noncontrast CT and gradient-recalled echo MRI show comparable accuracy in the diagnosis of acute ICH.
- Recent advances in the treatment of acute ischemic stroke have made rapid acquisition, visualization, and interpretation of images a key factor for positive patient outcomes.
- In Brazil, the hospital mortality rate is an outcome measure of care used as an indicator of quality of care for stroke. Computerized tomography is the main imaging method for diagnosing and managing stroke. The crude mortality rate was 34.3 percent, and the adjusted rate was 31.2 percent. Performance of a CT scan showed a protective effect in this patients, and this method of imaging is available in public hospitals in the state of Acre, northern Brazil, which is the subject of this poster.
Findings and procedure details

- Conducted a cross-sectional, population-based, retrospective nature, with systematic sampling in Rio Branco, Acre, Brazil, Amazon region.
- Patients with a diagnosis of ischemic stroke were included and subsequently underwent cranial CT, from December 2012 to April 2013, and revised all CT scans performed. The most important epidemiological data, the main risk factors and main findings on CT scans were evaluated.
- 38 patients were selected for inclusion in the study, the majority (57.9%) were male and aged between 46-55 years (28.9%).
- Of the total sample, 84.2% had some evident changes in TC, the most prevalent: recent signs of ischemia (57.9%) and lacunar infarcts (31.6%). FIG.1. Only 6 subjects (15.8%) showed initial cranial CT scan was normal.
- The lesions were located most commonly in the topography of the basal ganglia (36.4%), parietal lobes (22.7%) and occipital (22.7%). FIG 2.3.
- Risk factors for ischemic stroke were more prevalent Hypertension (86.8%), and smoking habits (57.9%), the latter associated with the recent findings of ischemia on CT showed statistical significance (p = 0.03) as well as achieve statistical significance when related to lacunar infarcts.
- In most patients (47.4%), computed tomography was performed between one and six hours after the onset of symptoms. Patients with signs of recent ischemia had an average period of time between the stroke and the realization of neuroimaging of 2.4 hours (p = 0.038).
- The present study showed that males had the highest number of cases, which goes against the findings of Copstein et al., where women accounted for 55.9% of total stroke cases.
- The Systemic Hypertension was the main modifiable risk factor for ischemic stroke, confirming the findings of Castro et al., In which 100% of patients affected with ischemic stroke, had hypertension. Arterial hypertension is considered in the literature the major cause of lacunar infarcts, with this statement closely related to the results of the present study. As described in the study of Pittella & Duarte, the basal ganglia appear as preferential location of cerebral infarcts.
- For diagnostic evaluation of these patients computed tomography is the most important method for initial evaluation of patients with suspected ischemic or hemorrhagic stroke, making it necessary to continue through more refined methods such as diffusion MRI or even CT with perfusion.
Fig. 1: Recent ischemic stroke in the parenchyma of the left parieto-occipital lobe.

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Fig. 2: Lacunar infarcts in the right thalamus and left lenticular nucleus. Hypodense areas in the periventricular white matter bilaterally adjacent to the posterior horns.

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Fig. 3: Ischemic stroke in the left lenticular nucleus.

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Conclusion

• The findings in this study corroborate with the literature, describing the main risk factors, topography and tomographic evidence of the ischemic lesions found in a selected region in the North of Brazil's population.
References


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