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EDITORIAL

Cerebral hemorrhage in Latin America: where are we?

Hemorragia cerebral en América Latina: ¿dónde estamos?

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This number of RMN has allowed us to review some aspects of cerebral hemorrhage in our region. In the first paper, Serrano et al. report a series of patients with intracerebral hemorrhage (ICH), analyzing prognostic factors[1]. The reviewer found the series exciting and wants to comment on clinical data. The first comment is the frequency of ICH among the global series of patients, representing 10.3%, corresponding to similar numbers to those from the series from Europe and North America[2,3]. This number contrasts with numbers reported in Mexico in the RENAMEVASC study, where 28% of acute stroke corresponded to ICH[4]. The authors considered deriving these patients to other hospital services (such as a neurosurgery ward) could explain this finding. This kind of registry must include consecutive patients from all areas of the hospital to avoid bias.

It is interesting to note the low frequency of possible or probable cerebral amyloid angiopathy (just 3.8%). One potential explanation could be the low mean age (62 years). As is well known, the frequency of amyloid angiopathy increases with age[5]. There is a real underdiagnosis of this condition in our region. The Boston criteria[6] is not well known for non-vascular neurologists, including general radiologists and inclusive neuroradiologists. Another potential explanation could be less accessibility to magnetic resonance imaging needed to analyze Boston criteria[6]. It is essential to mention the existence of computed tomography scan criteria such as Edinburg criteria[7].

Another weak point of this series is that it included several cases with arteriovenous malformations as well

non-aneurysmal subarachnoid hemorrhage, which can be explained by several potential causes such a reversible vasoconstriction syndrome, peri mesencephalic subarachnoid hemorrhage, and cortical subarachnoid hemorrhage[8]. It is interesting to consider only primary cases of ICH, essentially those due to hypertension, amyloid cerebral angiopathy, secondary to antithrombotic drugs, and cryptogenic.

There are several factors related to prognosis; among them, size of ICH, location, rupture to ventricular system, volume, and age are among the most predictive. One crucial point is the frequency of expanding hematoma related to control or not of arterial pressure. This point was not analyzed in the series. The focus for the treatment of patients after an ICH is the prevention of secondary brain damage, such as clot expansion, secondary brain edema, and intraventricular hemorrhage[9]. The only data analyzed was ventricular irruption, which was reported in 17.6% of cases and was a poor prognosis point.

The mortality rate in this series is relatively low compared with the RENAMEVASC study, which was 30%. The number of patients surgically treated were relatively low and do not explained the low mortality rate.

The present registry represents an important advance in regional organization about stroke care. However, we need to standardize diagnostic criteria as well therapeutical measures.

The series reported by Serrano et al.[1] is an excellent example of real-life conditions in which there is no

particular protocol treatment for ICH or place of admission of these patients. In this number of RMN, Ouyang and Anderson[10] gave us information about the recent trial INTERACT 3, in which three therapeutic targets were proposed for treating acute ICH[11] and call to action for effective implementation. Interestingly, the study was done in just nine low-income and middle-income countries. The care bundle protocol included the early intensive lowering of systolic bleed pressure (target < 140 mm Hg), strict glucose control (target 6.1-7.8 mmol/L in those without diabetes and 7.8-10 mmol/L in those with diabetes), anti-pyrexia treatment (target body temperature < 37.5°C), and rapid reversal of warfarin-related anticoagulation (target INR < 1.5). The primary outcome was functional recovery, measured with the modified Rankin scale. The results showed that the likelihood of a poor functional outcome was lower in the care bundle group (standard odds ratio 0.86, 95% CI: 0.76-0-97; p = 0.015)[11].

A care bundle is a small but crucial set of treatments that, when implemented together, can improve outcomes[12]. The role of any particular intervention in cluster trials is difficult to attribute, but the strong positive effect was to control blood pressure. An editorial from Ziai et al.[12], Discussed other explanations in this study, such as a promoted multidisciplinary approach with more frequent and efficient neurologic monitoring and not only the adherence with the bundle. Implementing this kind of program in our acute stroke protocols will benefit patients with cerebral hemorrhage.

Finally, another helpful article by López-Alvis et al. analyzes stroke knowledge in two highly educated populations in Mexico City[13]. The authors surveyed 499 participants in a medium-income condominium complex and another group of pharmaceutical company employees with products related to stroke treatment. The authors asked about the definition of stroke subtypes, such as subarachnoid hemorrhage, cerebral venous thrombosis, cerebral infarction, and cerebral hemorrhage. About 68% of surveyed people know correctly the term cerebral hemorrhage. How should we name a stroke in colloquial language? I think it is not helpful for practical reasons to divide the terms of stroke. In Spain, the term ictus is recognized. According to the Royal Academy of Spanish Language, ictus is a cerebral disease of vascular origin present with sudden onset. This concept is the most crucial aspect that people should know to attend immediately to a hospital.

Regarding stroke symptoms in Lopez-Alvis series, 71% recognized at least one, and 53% at least 2. In two similar studies from México City[14] and Querétaro[15],

Table 1. Knowledge about stroke risk factor and symptoms in three Mexican populations

Finding	López-Alvis et al.[13]	Góngora et al.[14]	Uribe et al.[15]
Number	499	330	1297
Mean age	58 years	40 years	44 years
Recognized 1 Risk factor 3 Risk factor	60% Not informed	30% 12%	35% 6%
Recognized 1 Symptom 3 Symptoms	71% 13%	36% 2%	38% 5%

similar conclusions were reached (Table 1). In Queretaro´s series, there was less recognized risk factors and symptoms percentage. This series involves open population in public places. There is poor knowledge about risk factors for stroke; the most commonly recognized risk factor is hypertension, as well as poor understanding of warning symptoms. Family history of stroke was the most common "educational" experience in all three studies. There is an opportunity area to improve. Private and governmental authorities should consider public campaigns for education about stroke with well-defined messages to recognize and treat it immediately.

Answering the question in the heading of this editorial, "Where are we?" we are moving forward with creating registries that standardize the diagnosis and treatment of ICH, which was made decades ago with cerebral infarction. A popular word should be recognized in Latin American countries, and Ictus could be an option. We finally have a care bundle incorporating early intensive blood pressure lowering and management protocols for hyperglycemia, pyrexia, and abnormal anticoagulation in patients with ICH presenting within 6 h of symptom onset with positive results. The previous strategies in Latin America (standardized diagnosis employing registries as protocol treatment) should be implemented to improve the outcome of this devastating disease.

Finally, massive educational campaigns should appear for people to recognize the stroke symptoms and attend to the nearest hospital, reducing the different window times in any "Ictus".

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Use of artificial intelligence for generating text. The authors declare that they have not used any type of generative artificial intelligence for the writing of this manuscript, nor for the creation of images, graphics, tables, or their corresponding captions.

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