

Subarachnoid hemorrhage: mortality in a South American Country

Hemorragia subaracnoidea: mortalidade em um país sul-americano

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Non-traumatic subarachnoid hemorrhage (SAH) usually caused by aneurysm rupture is a potentially devastating condition, feared both by patients and physicians. It is estimated that death from SAH occurs before hospital admission in 12% to 15% of cases¹. The epidemiology of SAH shows some particularities which professionals involved with health policies and the care of people with this disorder should be aware of. Age, gender, income, race and ethnicity have a significant impact on SAH presentation.

There is a wide variation in the annual incidence of SAH in different regions of the world, from 2 cases per 100 000 population in China to 22.5 cases per 100 000 in Finland as shown by the WHO MONICA Stroke Study². In South and Central America the SAH incidence is reported to be 4.2 per 100 000 person-years³ with studies from Chile and Barbados indicating incidences of 6.2 per 100 000 per year (3.0–9.3) and 3.0 per 100 000 per year (1.0–5.0), respectively⁴.

SAH incidence increases with age, with an average age of onset in adults of ≥ 50 years, being 1.24 times higher in women than in men^{3,5}. In a Brazilian study the age-adjusted incidence for SAH was higher among females and increased progressively with age⁶. Mortality data obtained from the city of Sao Paulo Health Statistic System (PRO-AIM) identified SAH as a much more frequent cause of death among women when compared to men⁷. Race and ethnicity are relevant factors in SAH with Blacks and Hispanics having a higher incidence than white Americans⁸. A study reviewing data on approximately one billion hospitalizations in the United States over a 30-year study period (1979–2008) identified 612 500 cases of SAH, which was more common in women and non-white persons⁹.

The impact of income on SAH rates was reported in a recent systematic review of population-based studies, where the incidence of SAH ranged from 2 to 16 per 100 000, with a pooled age-adjusted incidence rate in low to middle-income countries almost double that found in high income countries⁵. Another study found a significant income–mortality association for SAH among US patients, which was absent among Canadian patients¹⁰. The prevalence of intracranial aneurysms in the general population appears to be 2–5% and the frequency of unruptured aneurysms in angiographic and prospective autopsy series is approximately 3–4%¹¹. In population-based studies of Latin American and the Caribbean 2–5% of all strokes were subarachnoid hemorrhage⁴. In a study of 2418 consecutive patients from 19 hospitals in the city of Fortaleza, Brazil, the frequency of admissions of subarachnoid hemorrhage patients was 6.0%¹².

The case fatality of SAH seems to remain high worldwide. However, mortality rates appear to have declined in industrialized nations over the past 25 years¹³. Mortality rates vary widely across published epidemiological studies, ranging from 8% to 67% with a median mortality rate in the United States of 32% versus 43% in Europe and 27% in Japan¹⁴. In this issue of *Arquivos de Neuropsiquiatria*, Alcalá-Cerra et al.¹⁵ publish an important study which assessed the trends in mortality due to non-traumatic subarachnoid hemorrhage from 1999 to 2008 in Colombia. The study was based on the analysis of all deaths in the country over this period, and data was obtained from the Colombian national registry of deaths. During the 10-year study period, 1,893,635 deaths were recorded with a total of 17,272 deaths registered as SAH-related, ranging from 3.9 to 4.4 deaths per 100,000 people. The information presented by this study helps to understand the impact of such disease on the health system not only in

Colombia, but also in developing countries with similar population demographics.

As for other disorders, the assessment of stroke rates, including mortality, is best achieved with standardized population-based studies¹⁶. The term *population-based* is traditionally used to describe a study that involves a defined “general population” as opposed to hospital-based or database of death certificate studies. Analyses limited to hospital-based stroke registers or incomplete mortality data may distort results because of non-representative study populations

or underestimation of cases. Differences in study methodologies may account for different rates observed in stroke descriptive epidemiologic studies. Variations in stroke case ascertainment and evaluation, classification, definition of event rates, data presentation and statistical analysis (e.g.: use of age-adjusted data and of confidence intervals) make direct comparisons difficult among epidemiological studies. Standard definitions, procedures, methods and data presentation are important to allow more reliable comparisons in much needed stroke epidemiological studies.

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