

Head Position in the Early Phase of Acute Ischemic Stroke: An International Survey of Current Practice

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Background: Evidence to recommend a specific head position for patients in the early phase of acute ischemic stroke (AIS) is scarce. The aim of this study was to assess current head position practice for AIS patients among physicians from hospitals in different countries. **Methods:** A cross-sectional survey research design was used; physicians who are part of a stroke research network were invited to participate by e-mail. Descriptive statistics were used. **Results:** An invitation to participate was delivered to 298 doctors from 16 countries and 42.9% completed all survey questions. Participant responses were evenly divided in sitting up and lying flat position as the most usual at their hospital: 52.8% (95% confidence interval [CI], 43.7-61.0) of respondents preferred sitting up, whereas 47.2% (95% CI, 38.2-55.5) preferred lying flat; 53.9% (95% CI, 45.3-62.5) of participants answered that no written protocol specifying the indicated head position for stroke patients was available at their hospital or department, and 71% (95% CI, 63.2-78.9) recognized being uncertain about the best position for AIS patients. **Conclusions:** Common practice differs between physicians, and there is a lack of consensus about the best strategy regarding head position for AIS patients in many countries. An opportunity exists for a randomized trial to resolve this uncertainty and develop evidence-based consensus protocols to improve patient management and outcomes. **Key Words:** Brain ischemia—cerebral hemorrhage—data collection—head position stroke—survey.

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Most of the current treatment strategies for acute ischemic stroke (AIS) are aimed at improving brain perfusion and decreasing injury from ischemia, as well as

preventing medical complications of being bedridden.¹ Recanalization and reperfusion therapies to salvage the ischemic penumbra have shown to be efficacious in improving outcomes at 3 months when administered in time.² Improving blood flow through collateral arteries and leptomeningeal recruitment is another strategy and has been attempted in several interventional trials, aiming at increasing mean arterial blood pressure or increasing blood volume by vasodilatation; however, none so far have demonstrated efficacy.^{3,4} Nevertheless, the simplest method to augment cerebral blood flow to the ischemic penumbra could be placing the patient in a “lying flat” rather than “sitting up” position,⁵ but an association with clinical outcome improvement is still lacking.

Accordingly, the ideal head position policy for patients with AIS is still unknown, and any potential benefit on the brain may be offset by a delay in early mobilization and increased hazard of aspiration pneumonia or

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exacerbation of cardiac failure in vulnerable patients.⁶ Limited available data do not allow a specific head position guideline or recommendations to aid clinical decision making.⁷⁻⁹ Nonetheless, a beneficial effect of lying flat head position in the initial hours of AIS could be expected, and a possible better outcome for intracerebral hemorrhage (ICH) patients in a sitting up position.

Along with the uncertainty regarding the best positioning policy and the lack of evidence in clinical guidelines recommendations, to our knowledge there is no information about what is the current practice regarding head position in patients with AIS. This study aimed at assessing current head position practice patterns for AIS patients among physicians from hospitals in different countries.

Participants and Methods

Survey Design and Study Population

A cross-sectional survey of stroke physicians was conducted using a self-administered questionnaire. The survey was constructed and reported in accordance with the published recommendations of the Journal of Medical Internet Research.¹⁰ This study was performed following the Australian National Statement on Ethical Conduct in Human Research,¹¹ and ethical approval was obtained from the Human Research Ethics Committee from the University of Sydney.

The sample consisted of all physicians who are part of the George Institute for Global Health stroke research network and are participating in the international, multicenter trial for enhanced control of hypertension and thrombolysis stroke study (ENCHANTED).¹² The UK investigators were excluded because a concurrent similar study was taking place in this region. Stroke physicians known by the authors were personally invited to participate as well.

Instrument

A literature search did not reveal any validated questionnaire for our survey content, and thus we developed a survey in accordance with the methods advocated by Burns et al.¹³ Items for the survey were generated by an expert panel until no new items emerged. The items were then pre- and pilot-tested on 4 stroke neurologists who provided input on survey flow, ease-to-use, question clarity/content, and time to completion, and survey questions were removed or modified in accordance with feedback. The final questionnaire included 20 questions and was available in English, Spanish, and Chinese. The questions were related to the characteristics of the hospital, usual head position for patients with AIS at the hospital, their preferred positioning indication for AIS patients, and whether a local guideline or policy related to head position existed. Physicians were asked to give their level

of certainty regarding the best position in AIS patients and state their concerns about lying flat position. Demographic characteristics were also recorded. All these questions were closed, and the participants were asked to choose only 1 alternative or all that applied depending on the question using radio buttons.

Two formats of the questionnaire were available: online version powered by SurveyMonkey (SurveyMonkey Inc, Palo Alto, CA, www.surveymonkey.com) and a spreadsheet to be completed and returned by e-mail. The participant was free to choose either of them. The online version was accessible with a direct Web address and had open access to everyone having the survey Web address. It consisted in 3 screen pages with 5 to 8 items per screen. The spreadsheet could be filled in its digital format and returned by e-mail or printed, completed, and returned by fax.

A completeness check was not available before submission of the answers, but both formats had a request to please answer all the questions. Respondents were able to review and change their answers before submitting. Multiple entries from the same individual could not be prevented, but the information requested like e-mail address allowed us to detect it if present.

Procedure

Participants were e-mailed a letter explaining the aims of the survey, completion instructions, and time and that participation would be anonymous and voluntary. A reminder e-mail letter was sent 3 weeks after the initial invitation to participants who had not responded. No incentives were offered.

Data Analysis

The online format using SurveyMonkey allowed data collection and downloading to a spreadsheet. All the answers received on this format or on the spreadsheet were included in a final spreadsheet report by the project system developer. This constituted the database that was analyzed with SPSS for MAC (version 21, 2012; SPSS Inc., Chicago, IL). The response rate was calculated with the number who should have received the survey divided by participants who sent back the completed survey. Descriptive statistics were used to summarize responses. Statistical significance was prespecified at the 5% level.

Results

An invitation to participate was initially sent to 316 doctors from 16 different countries, but 18 alerts that the e-mail could not be delivered were received. From the 298 participants who should have received the invitation, 128 (42.9%) completed all survey questions. Only completed questionnaires were analyzed. [Figure 1](#) shows

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