Thrombolysis for Acute Stroke in Pediatrics

Robert Belvís, PhD

The opinions in this editorial are not necessarily those of the editors or of the American Heart Association.

From the Stroke Unit, Department of Neurology, USP-Dexeus University Institute, Autonomous University of Barcelona, Barcelona, Spain.

Correspondence to Robert Belvís, Stroke Unit, Department of Neurology, USP-Dexeus University Institute, Autonomous University of Barcelona, Paseo de la Bonanova n 67, E-08017 Barcelona, Spain. E-mail 32353rbn@comb.es

© 2007 American Heart Association, Inc.

Stroke is an infrequent condition in pediatrics and the etiological subtype distribution is different in children to adult patients. For example, prothrombotic factors account for 68% of strokes in newborns, and for 56% in infants and children. Other etiologies more frequent in children than in adults are: congenital heart malformations, vascular abnormalities, infectious diseases or some rare metabolic problems. In most of these conditions (cardioembolic, hypercoagulable states), the formed thrombus is fresh and rich in fibrin, the better for the recanalization with tPA.

Despite the fact that “less than 18 years of age” is an exclusion criterion for thrombolysis, in recent years some pediatric cases have been published. Most of them are intra-arterial thrombolysis with tPA or urokinase and sometimes plus intracranial angioplasty. Moreover, several patients are already young adults (15 to 18 years of age). Although the cases are diverse, the neurological recovery was complete in all of them and neither death nor symptomatic intracranial hemorrhage was reported.

The excellent article by Janjua et al provides us with the first national register of thrombolysis in children. It is a retrospective study that analyzes 20% of all community hospital admissions in the United States. Over a 4-year period, 2904 pediatric patients with stroke were included in the study, with <2% of them receiving intravenous or intra-arterial thrombolysis. After reading the article, we can establish 3 ideas about thrombolysis in children: firstly, no symptomatic intracranial hemorrhage was reported in the tPA group; secondly, mortality and dependency were more frequent in the tPA group at discharge, but the difference was not significant, and thirdly, patients of the tPA group needed mechanical ventilation more frequently and their stay was longer.

However, mortality, dependency, hospital stay and mechanical ventilation are related to the severity of the stroke, and this variable is not controlled in this study. In addition, no data about the National Institutes of Health Stroke Scale (NIHSS; before and after thrombolysis), the modified Rankin Scale and the Barthel Index scores are provided, because this register is retrospective. Finally, neither the therapeutic window, tPA doses, nor information about the vessel occluded are explained. Without these data no conclusion about efficacy of thrombolysis can be drawn.

This original and provocative study of Janjua et al is the first approach to thrombolysis in children with acute stroke, and it proves the need for a randomized, controlled, double-blind trial to check tPA efficacy and safety in this group of patients. However, thrombolysis is a neurological therapy and pediatricians are not familiarized with this treatment. For this reason, neurologists are responsible for informing pediatricians of our experience in thrombolysis in adults. At present, thrombolysis in pediatric stroke is following the same path that thrombolysis in adults followed at the end of the past century.

Disclosures

None.

References


Key Words: pediatric stroke  tPA
Thrombolysis for Acute Stroke in Pediatrics
Robert Belvís

Stroke. 2007;38:1722-1723; originally published online April 12, 2007;
doi: 10.1161/STROKEAHA.107.487116

Stroke is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2007 American Heart Association, Inc. All rights reserved.
Print ISSN: 0039-2499. Online ISSN: 1524-4628

The online version of this article, along with updated information and services, is located on the
World Wide Web at:
http://stroke.ahajournals.org/content/38/6/1722

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in Stroke can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to Stroke is online at:
http://stroke.ahajournals.org//subscriptions/