An international based survey on perioperative use of tranexamic acid in neurotrauma

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Abstract: *Background*: Tranexamic acid is used to reduce bleeding, easy to use, affordable and relatively safe. There are few studies on the use of tranexamic acid in trauma and especially in neurosurgery. There is no published study on the trend the use of tranexamic acid in neurotrauma surgery among international doctors. The aim of this study was to evaluate the current practice for use of tranexamic acid during neurotrauma surgery. *Materials and Methods*: A 11-question electronic survey was sent to 25 practicing physicians worldwide. Basic demographic information and estimated rates of use of tranexamic acid during neurotrauma surgery. *Results*: Twenty five physicians responded to our survey. Very Few trusts (12%) use tranexamic acid during neurotraumasurgery. *Conclusion*: Further studies are required to establish guidelines in neurosurgery and neurotrauma, especially. The use of this medicine potentially helps improve patient care with head injury and save lives.
Key words: Neurotrauma surgery, survey, tranexamic acid, trauma

Introduction

Traumatic brain injury has been associated with significant mortality in the acute period. (1,2,3,4). There is great interest for the use of strategies that allow the decrease of bleeding within the surgical period. Very few trends studies have evaluated the use of tranexamic acid in surgery. (5,6). Until this date there is no study to assess the practical use of tranexamic acid in neuronal trauma surgery. The aim of this study was to record the use of tranexamic acid for neurotrauma surgery in physicians worldwide

Materials and methods

To determine how physicians internationally use tranexamic acid in brain trauma surgeries; we developed a web-based structured survey with real time results through an online survey (http://www.neuropractice.com). Survey invitations were sent by e-mail, and aimed physicians (Neurosurgeons, intensivist, residents of neurosurgery/critical care, trauma surgeons and others) who manage patients with brain traumatic injury, during the month of August of 2015 to September of 2015. For ethical considerations was decided not to identify any of the physician surveyed. We used dichotomous choice questions, and multiple choice questions with single answers. The evaluated variables were: experience, occupation, place of training and use of ventriculostomy and placement of an intracranial pressure monitoring device. Answers from the survey were compiled and entered into an Excel database (Microsoft, Redmond, Washington). Each answer to a question was placed in a corresponding category and the frequencies of each category were computed. The data was analyzed by software 17.0 (SPSS. Inc., Chicago, IL). The data obtained was analyzed statistically and was determined the frequency distribution of each of the variables.

Results

Twenty five international physician completed the survey, all physician practiced in many countries. The time, of experienced was analyzed: 0-5 years (16%; n= 4), 5-10 years (20%; n=5), 10-20 years (36%; n=9), 21-30(28%; n=7) years. When asked about occupation the results were; neurosurgeon (32%; n=8), intensivist (36%; n=9), resident of neurosurgery/critical care (8%; n=2), trauma surgeon (8%; n=2), anesthesiologist (4%; n=1), RN critical care (4 %; n=1), others (8%; n=2). When asked about the use of tranexamic acid; yes (52%; n=13) and no (48%; n=12). When asked about the existence of an institutional policy for the use of tranexamic acid; yes (52%; n=13) and no (48%; n=12). When asked about the use tranexamic acid for all patients on neurotrauma surgery, (12%; n=3) and not (88%; n=22). When asked about the use of Tranexamic Acid in subdural chronic hematoma, yes (20%; n=5) and no (80%; n=20). When asked about the use Tranexamic Acid in recurrent subdural chronic hematoma; yes (12%; n=3) and no (88%; n=22). When asked about the use Tranexamic Acid in Epidural hematoma; yes (36%; n=9) and no (64%; n=16). When asked about the use Tranexamic Acid in Acute subdural

hematoma; yes (44%; n=11) and no (56%; n=14). Regarding the discontinuation of maintenance (Tranexamic Acid) at the time of skin closure was performed; yes (16%; n=4) and no (84%; n=21). Other concern for the evaluation was the consideration of use with continuous infusion in the intensive care unit; yes (32%; n=8) and no (68%; n=17).

Discussion

Tranexamic acid is a synthetic derivative of the amino acid lysine that exerts its antifibrinolytic effect through the reversible blockade of lysine binding sites on plasminogen molecules. (6,7). The publication of the CRASH-2 trial opened a great interest in relation to the use of tranexamic acid and bleeding. (9). This has motivated the interest on the role of fibrinolysis in bleeding. It has been shown that the effect of tranexamic acid is greater the day of injury; it also reduces the risk of death from all causes by 20%. It has been established that survival is only evident in patients treated initially in the first 3 hours. Until this day, no study has surveyed the use of tranexamic acid in patients with neuronal trauma. From this survey we can infer that 52% of respondents' trusts routinely use tranexamic acid in neurosurgery. Our results show an institutional policy for the use of tranexamic acid in 52%. There is disparity in the use of tranexamic acid; low use in neuronal trauma surgery in these cases may be beneficial. It is possible that some concerns about the possible complications derived from this drug are the reason of the low use of tranexamic acid. These complications have been estimated as too low. (10,11,12) Despite evidence showing this drug is much useful and has low risk of side effects, it is clear that its use is not part of routine practice in many of the same neurosurgical centers.

Conclusion

This survey shows on the current practice of physicians who specialize in neurotrauma surgery and tranexamic acid. As a relevant conclusion, further studies are required to achieve to provide a definitive dosing recommendations. Also, to confirm the role of tranexamic acid in the management of neurotrauma surgery and so the improvement of patient care.

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