Survey on management of post thrombolysis symptomatic intra- cerebral haemorrhage

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INTRODUCTION

Intra-cerebral haemorrhage (ICH) is potentially a fatal complication of thrombolysis in the treatment of acute ischemic stroke and therefore is a major concern for the physicians managing stroke patients.¹ Most symptomatic intra-cerebral haemorrhages (SICH) occur within the first 24 hours of receiving thrombolytic therapy, with the majority of fatal haemorrhages occurring within the first 12 hours.² The incidence and mortality of the post-thrombolysis SICH is 3.3% and 52.3% respectively.³ Although the management of ICH is being researched thoroughly, treatment options remain limited.³ Therefore it is imperative that ICH events are prevented before they occur.⁴ An intra-cerebral haemorrhagic event can occur spontaneously or immediately following a cerebral infarction. Risk of haemorrhage can be significantly increased by the administration of thrombolytic agents.^{3,5} Currently, standardised guidelines for managing thrombolytic associated haemorrhagic events do not exist.⁶ Due to the absence of evidence-based guidelines, many academic institutions have developed their own protocols for managing ICH following thrombolysis. These include the administration of fresh frozen plasma, that cryoprecipitate, vitamin K, platelets and aminocaproic acid.⁷ The aims of this study was to collect data on how intracranial bleeds are treated worldwide, to explore the risk factors associated with that expose to SICH events following thrombolysis in patients who have suffered an acute ischemic stroke and to investigate the preferred treatment options that yield the greatest success following an ICH event.

METHODS

A 12-question survey was devised using SurveyMonkey® (figure 1). The survey was distributed electronically to members of the European Stroke Association (ESO) and World Stroke Organisation (WSO) in December 2017 and remained open for 12 days. Multiple-choice format was primarily used as question style and free text boxes were also used where additional views of the individual respondents were sought. The responses were analysed using descriptive statistics and qualitative comments to open-ended questions were analysed through thematic analysis.

Survey questions

- Have you had any experience dealing with a symptomatic intracranial haemorrhage
 - Yes
 - No
- Which country is your hospital in?
- What is the name of your hospital?
- What is your job title?
 - Doctor
 - Nurse
 - Surgeon
 - Administration Staff
 - Other
- What is the incidence of SICH following thrombolysis in stroke patients in your hospital?
 - 0-3%
 - 3-6%
 - 6-9%
 - 9-12%
 - 12-15%
 - Over 15%
- What do you think is the greatest risk factor that attributes to a SICH incident post thrombolytic treatment:
 - Stroke severity
 - Diabetes mellitus/hyperglycaemia
 - Hypertension
 - Previous treatment with anti-thrombolytic/anti-platelet agents
 - Other
- How are the patients managed following a symptomatic intracranial bleed
 - Fresh frozen plasma
 - Cryoprecipitate
 - Vitamin K
 - Platelets
 - Aminocaproic acid
 - Tranexamic acid
 - Other
- In which of the treatment options mentioned in question 5 have you observed the **best** outcome?
 - Fresh frozen plasma
 - Cryoprecipitate
 - Vitamin K
 - Platelets
 - Aminocaproic acid
 - Tranexamic acid
 - Other
- In which of the treatment options mentioned in question 5 have you observed the **worst** outcome?
 - Fresh frozen plasma
 - Cryoprecipitate
 - Vitamin K
 - Platelets
 - Aminocaproic acid
 - Tranexamic acid
 - Other
- What is the survival rate following the bleeding incident
 - 0-10%
 - 10-20%
 - 20-30%
 - 30-40%
 - 40-50%
 - Over 50%
- Would you like to be kept up to date of the outcomes of this research project?
 - Yes
 - No
- If yes, please provide us with your email address.

Figure 1: The 12 question survey

RESULTS

There were 64 responses in total with the majority from stroke physicians. The responses were mostly from Europe. The three most common risk factors identified for SICH following thrombolysis were stroke severity, uncontrolled hypertension and previous anti-platelets and/or anti-thrombotics use (45%, 40% and 16% respectively). Thrombolytic therapy, anti-platelet therapy and diabetes mellitus were found to be the least contributing risk factors (11.6%, 2.3% and 0% respectively). The SICH incident in most hospitals was between 3-6%. The most commonly used management included fresh frozen plasma (41%) and cryoprecipitate (24%). Less commonly used treatment included vitamin K (9%), aminocaproic acid (6%), tranexamic acid (6%) and platelet transfusion (6%). However the majority of the individual answers highlighted that no particular management option yielded the best result, but all had similar outcomes. 75% of the respondent felt that the SICH associated mortality was <50% whilst 20% found mortality around 80%.

Figure 2: risk factors attributing to a SICH incident post thrombolytic treatment

Figure 3: management option yielding the best outcome following a SICH

CONCLUSIONS

- This study found that the greatest risk factor leading to SICH was the stroke severity.
- Although fresh frozen plasma yielded the best management option for some respondents, many respondents believed that all management options have a similar outcome.
- Overall all the respondents agree that SICH associated mortality is very high.
- Urgent research should be undertaken with newer agents to improve the outcome of the patients.

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