Name of Disorder: Stroke

Essay title: Acute Stroke – A Clinical Emergency

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Stroke is a major cause of disability and death in Australia and worldwide. Cerebrovascular disease is the second leading cause of death in Australia and resulted in 11204 deaths in 2010.[1] The yearly cost burden of stroke is estimated $2.14 billion in Australia.[2] Recent advances in medical therapies have allowed treatment with powerful 'clot-busting' medication (termed thrombolysis) if certain criteria are met. This article will discuss the use of this medication and highlight the time critical nature of acute stroke.

Thrombolysis has become standard of care treatment for patients with an acute stroke who fulfil certain criteria. Large studies carried out internationally and within Australia have proven a significant benefit if given in the first 4.5 hours since symptom onset.[3,4,5] There may still be benefit in a subset of patients who present beyond this timeframe and there is currently a number of clinical trials evaluating this hypothesis. It is hence very important for the treating Doctors to be informed of an accurate time of symptom onset. If the symptoms did not begin in the presence of someone, the onset time is taken from the time the patient was last seen well. Thrombolysis is contraindicated in the presence of some previous medical conditions, such as recent intra-cranial haemorrhage, bleeding disorders, treatment with powerful blood thinners, and recent high risk surgery.

When given, the medication acts to break down the clot which is occluding an artery in the brain, which is causing the symptoms. Unfortunately, the clot is only broken down in a third of cases. There are a number of factors which influence how well this process works, including[6]:

- Clot size
- Clot location
- Time since symptom onset

There are also patient factors which relate to positive outcomes in the thrombolysed patient[7]:

- Age of patient (less than 85 have better outcomes)
- Milder baseline stroke symptoms
- Lower baseline Blood Pressure
- Absence of changes suggestive of established stroke on CT scanning

Thrombolysis offers a chance of breaking down the blood clot and restoration of normal blood flow through the arteries which supply the affected area of brain, although it is not without risk. As the medication is such a powerful blood thinner, it can increase the risk of bleeding. Bleeding in this setting can range from minor to very severe, requiring blood transfusions. The bleeding can occur at many sites including superficially at cannula sites, internally or in the brain. The risks of this occurring are decreased by the completion of a checklist prior to commencement of this medication to inform the treating Doctor of any potential risks or contra-indications.

Acute stroke is a clinical emergency and treatment is available which has greatly improved outcomes. Patients that present within the timeframe and are treated early gain the most benefit. There are however limitations to this therapy, in that it cannot be given to and does not work for all patients. It also has inherent risks, which are generally outweighed by the benefit it can provide. The future is bright for stroke patients, with newer medications currently being researched which could potentially improve patient outcomes further.

References

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