Kane Medal

Neuroprotection in acute stroke: future or fantasy?

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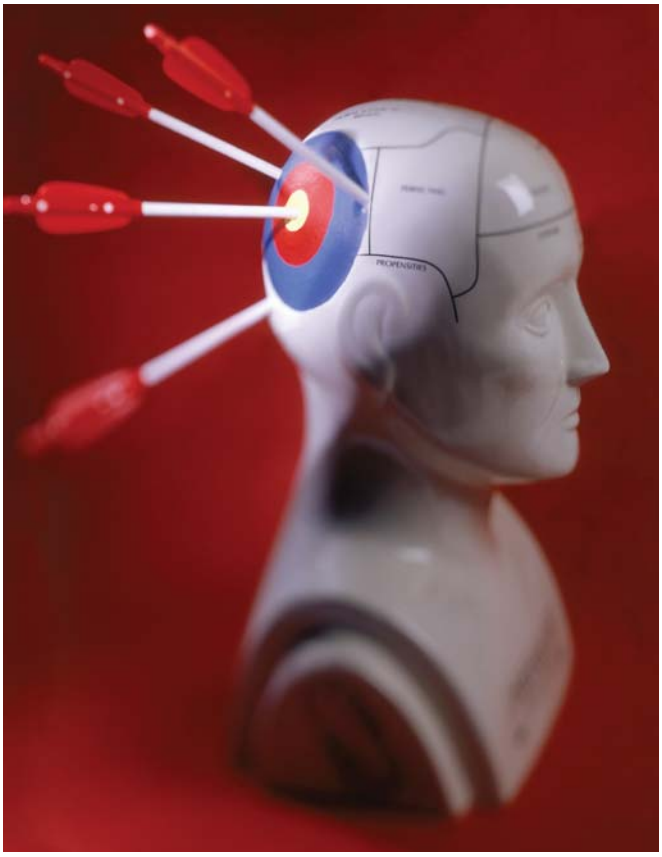

Stroke is a devastating health concern in the modern world, resulting in compromised quality of life, long-term disability and, at times, death. It also has a heavy impact on the public sector by straining already limited healthcare resources. At present, recombinant tissue plasminogen activator (rtPA) is the only approved medical treatment for stroke. Due to the limitations of rtPA, other therapeutic options have been actively explored, such as neuroprotective drugs. Neuroprotective drugs attempt to salvage the ischaemic penumbra, the potentially salvageable tissue surrounding the ischaemic core, thereby reducing sequelae and improving prognosis.[1,2] Unfortunately, consistent failures in both pre-clinical and clinical trials have dampened the enthusiasm for neuroprotection research. The unsuccessful SAINT-II trial has left many researchers with serious doubts. However, while the past has been bleak, there is optimism in the future of neuroprotective research. Post-hoc analysis into failed trials has shown considerable room for improvement in trial design, such as using animal models closer in neuro-morphology to humans,[3] accounting for co-morbidities,[3] implementing realistic window to treatment times,[4] and re-evaluating biologically relevant end-points and outcome measures.[5] With this in mind, the STAIR committee plans to discuss the necessary changes needed to increase the validity and precision of future pre-clinical and clinical trials. In addition to improving trial design, alternative approaches to neuroprotective research also show potential. Rogaliewski *et al* stress that the complexities of the ischaemic cascade make it unlikely that single mechanism approaches will have a substantial impact on stroke outcome.[6] Instead, combination therapy matching drugs with different neuroprotective mechanisms may have synergistic effects. For example, new studies have demonstrated the effectiveness of using improved shivering management and endovascular cooling technology.[7] Alternative neuroprotective treatments, including albumin and magnesium therapy, may also play a role in the future.[8] In light of the potential for improved trial design and the encouraging results from multi-modal stroke management, there may yet be room for new research in neuroprotective agents.

References

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