Is Intraarterial tPA Within 3 Hours the Treatment of Choice for Selected Stroke Patients?

No

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Routine provision of intraarterial tPA is unfeasible, not cost-effective, and would deflect stroke services from offering other far more effective interventions. The public health benefit of intraarterial tPA is negligible, and evidence from the screening log of the PROACT 2 trial suggests that this intervention has no prospect producing a measurable impact. In the PROACT 2 study, a total of 12,323 patients were screened, of whom 474 had angiograms to randomize 180 subjects in this trial—a “treatment” rate of <1.5%. A quarter of ischemic stroke is lacunar subtype, and angiography of the major vessels will be normal in these patients, yet current evidence suggests that patients with lacunar stroke also benefit from intravenous thrombolysis. Even large cities struggle to provide just one center with sufficient expertise to provide a 24-hour interventional stroke neuroradiology service. In addition to this feasibility data, there is little prospect that intraarterial tPA will ever be cost-effective. In fact, there is still substantial uncertainty of the overall risk/benefit, and thus current cost-effectiveness estimates have extremely large confidence intervals. The evidence was recently summarized in the new Australian Acute Stroke Management Guidelines with the comment that “Further robust large studies are needed.”

Stroke medicine suffers from poor resources compared to heart disease and cancer, not only for research but also for clinical practice. As a result, stroke service provision remains poor even in wealthy countries. At a time when there is a need to build up basic stroke services, a 24-hour interventional stroke neuroradiology service. In addition to this feasibility data, there is little prospect that intraarterial tPA will ever be cost-effective. In fact, there is still substantial uncertainty of the overall risk/benefit, and thus current cost-effectiveness estimates have extremely large confidence intervals. The evidence was recently summarized in the new Australian Acute Stroke Management Guidelines with the comment that “Further robust large studies are needed.”

Stroke medicine suffers from poor resources compared to heart disease and cancer, not only for research but also for clinical practice. As a result, stroke service provision remains poor even in wealthy countries. At a time when there is a need to build up basic stroke services, it would be a gross misuse of limited resources to invest in intravenous thrombolysis. For example, the European Stroke Initiative survey found that less than 10% of European hospitals admitting patients with stroke had optimal facilities. As a result only 3.3% of ischemic patients received thrombolysis in these European survey hospitals in 2005. In Australia, the recent National Stroke Foundation audit revealed that only 21% of hospitals had a stroke unit, only 24% of hospitals offered thrombolysis, and only 1% of ischemic strokes were thrombolysed.

From a public health point of view stroke is eminently preventable, and we must use our limited health resources to invest in stroke prevention, such as: effective treatment to lower blood pressure; stop smoking; find and treat those with atrial fibrillation and diabetes. At the same time we need high-quality services for those who have stroke. The evidence strongly suggests that early identification of the pathology of stroke, treatment in a comprehensive stroke unit, and use of proven treatments will achieve a great deal. The most powerful of these interventions is stroke unit care (a 5% to 6% absolute increase in independent survival). Thrombolysis with intravenous tPA can achieve a greater absolute benefit in some people but can only be offered to about 20% of those with ischemic stroke, and will therefore never achieve the same public health benefit of universal stroke unit provision. An acute thrombolysis service should be established once stroke units are provided. Of course, the cardiologists are well aware of the other benefits of specialist unit care: the ability to concentrate skills and resources provide a fantastic “research engine” to then develop large scale trials and refine all aspects of intervention. It has long puzzled me why those in stroke medicine have not fought more strongly for universal stroke unit care over the past few decades.

Concentrating on boutique interventions like intraarterial tPA is an enormous waste of time compared with the big picture. If we seriously want to improve acute stroke care we need:

- Universal provision of comprehensive stroke units at all Emergency Medicine Hospitals admitting patients with stroke.
- Large scale trials to extend the indications for intravenous tPA and investigate other widely practicable treatments such as urgent blood pressure lowering, early and intense rehabilitation, and many other promising interventions.

Epidemiologically, it is far better doing the simple things well to as many people as possible rather than focus on the complex interventions for the few. We should focus our limited stroke resources in the same manner.

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References

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