ENDOVASCULAR THERAPY FOR ACUTE ISCHEMIC STROKE SHOULD BE USED ROUTINELY IN CLINICAL PRACTICE

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It is true that the acute stroke with the *best* evidence supporting it is systemic thrombolysis with IV tPA. My esteemed opponent will no doubt emphasize level Ia evidence for interventional therapy as a reason not to employ it. It is, however, an over-statement to suggest that all other acute therapeutic interventions are not supported by *any* evidence. Indeed, there is ample evidence that various endovascular therapies do result in recanalization. Furthermore, recanalization and reperfusion are both associated with improved outcome. What is missing at this moment, is incontrovertible evidence, i.e. multiple large phase III randomized controlled trials showing that endovascular therapy improves clinical outcomes on a stroke population basis. Should we let this deter us from treating patients with endovascular techniques? I would submit not, as the evidence for benefit in individual patients can actually be quite profound.

I ask you dear reader, if you were a stroke patient tomorrow, suffering from a dominant hemisphere ischemic stroke, secondary to proximal MCA occlusion, what would your therapy of choice be? Assuming you were in a an acute stroke care hospital and your CT scan, completed within 4.5 hours of symptom onset, showed minimal ischemic changes, most of you would no doubt elect for IV tPA. I support this decision and would make the same one myself. Certainly, this is what the best available evidence would suggest is reasonable. Furthermore, there is no acute therapy that can be delivered faster and more efficiently. There is nothing more disheartening than listening to a clinician of any kind at a meeting or hospital rounds explain with a haughty tone that 'we know with certainty that this M1 occlusion is not going to open up with IV tPA.' In fact, we know no such thing and these types of statements can inadvertently lead the unconverted away from interventional therapy. It is more likely, however, that there is a relastionship between clot burden and probability of timely recanalization and reperfusion.

Does treatment need to stop here, after IV tPA? Shall we just go home with a sense of self satisfaction at a job well done? Are we bound so tightly by the rules of evidence that we are unable to consider alternatives? Letting the thrombolytic work and hoping for the best is certainly the easiest approach from a practical standpoint. It's also the least immediately satisfying, as we really have no idea if we have made any impact whatsoever until the next day in most cases. This is analogous to a hunter firing into a herd of deer, whilst wearing a blindfold and then going home, only to return the next day to see if meat is on the dinner menu. I am the first to admit that it is nearly as unsatisfying to sit and watch someone else come along with a superior weapon and shoot the deer for you—even if you did tell them where the deer were!

Let us return to you—our proximal MCA occlusion patient. Having received your tPA bolus and not experiencing a Lazarus like effect after 30 minutes of the infusion, how many of you would refuse the services of an eager interventionalist standing quietly by your Emergency Department stretcher—as they so often do? My own experience as a non-interventionalist stroke neurologist, who has given his fair share of 'the juice' is that most of you would indeed accept this kind offer. Would you be upset to know that an angiogram revealed an open artery at the conclusion of your tPA infusion? Would you be bothered by the idea of opening the artery, with endovascular therapy some 15 minutes earlier than it otherwise would have? How about 1 hour or 10 hours? The truth is in most cases, we just don't know when tPA opens arteries. Those of us who consider ourselves students of the penumbra, however, are agreed that a shorter time to reperfusion is generally a good thing. This does lead us to patient selection. It is critical that we properly select patients for interventional procedures, based on more than the presence of a vessel occlusion. Too often, the interventionalist and/or proponent of endovascular therapy is unable to see anything but nails once they have hammer in hand. Here a judicious hand is likely even more important than it is when considering IV therapy.

What about risk? Yes, there may be more risk associated with endovascular therapies. Here, however, we must accept the sword of evidence does cut both ways. While it is acknowledged that endovascular therapies are not supported by evidence, the concept that they are harmful is not either. The 'evidence' for increased hemorrhagic transformation rates following endovascular therapies, relative to IV tPA, is all based on *indirect* comparisons. It does not take a seasoned trialist to recognize that the patients going into the endovascular trials are generally more severely affected with respect to neurological disability, than the average patient included in IV trials. I direct any of you who have forgotten the folly of indirect comparisons to re-read the Profess trial results and remind yourselves of your preconceptions about the two tested therapies in that study.

Yes, we therefore do urgently need a trial assessing endovascular augmentation following systemic thrombolysis versus IV tPA alone. This trial is ongoing and it is called Interventional Management of Stroke III (IMS III). It is arguably the most important unfinished trial of this decade (and the last!). It is a travesty that it has not yet been completed and the wholly converted who worship at the altar of intervention (and possibly other ulterior motives), do have much to answer for in this regard. It is also conceded that the bar for interventional devices is unfairly set lower than that for pharmacological agents. Should we let this inequity

prevent us from offering the most we can to each individual patient? Obviously, I would suggest not. We do have an opportunity and an obligation to at least consider going above and beyond the standard of care in all of our patients. In this way, we can drive change and innovation in acute stroke care, rather than simply react to new developments.