

Towards Mainstream Adoption of Tenecteplase for the Treatment of Acute Myocardial Infarction

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Dear Editor,

The article entitled "Association of Risk Factors and Its Bleeding Complication for Tenecteplase Administered in Acute Myocardial Infarction (AMI)" caught my attention regarding the role of thrombolytic agents for the management of ST elevation myocardial infarction (STEMI).¹ Streptokinase, the older generation of intravenous thrombolytic is the most ubiquitously used thrombolytic agent despite the increasing popularity of tenecteplase. While data from ASSENT-1 and ASSENT-2 were relatively reassuring in terms of bleeding complications, we must remember that these studies were done prior to the era of new oral antiplatelets.^{2,3} Current best practices encompass the use of aspirin with loading dosages of 300mg or 600mg of clopidogrel or 180mg of ticagrelor for the antiplatelet treatment armamentarium whilst the adjuvant anticoagulation for concomitant tenecteplase administration can be unfractionated heparin, low molecular weight heparin such as enoxaparin, or fondaparinux. The current cocktail of thrombolytic, antiplatelets and anticoagulant is far more potent and it is reassuring that there was no signal of higher bleeding risk in the study.

However, it was surprising that 54% of the patients were deemed to have failed thrombolysis treatment. The infarct-related artery patency at angiogram is more than 80% for tenecteplase compared to about 50% rate achievable with streptokinase.^{4,5} Thus, the obtained result showed that tenecteplase was disappointingly just comparable to streptokinase. There were no data on the use of antiplatelet and adjuvant anticoagulation and these confounding factors may have played a role in the overall results.

Thrombolysis is still the most common treatment modality for AMI worldwide and equally as efficacious as primary percutaneous coronary intervention (PPCI) especially for the first 3 hours of presentation. We still do not have adequate infrastructure for providing full scale PPCI services. Furthermore, the vast geographical terrain such as in the state of Pahang, Sabah and Sarawak present a unique challenge to the timely administration of reperfusion strategy to the patients at risk.

Tenecteplase is conveniently given in a bolus manner and have a higher coronary artery patency rate and reperfusion success. In contrast, streptokinase is infused over 90 min and can be potentially interrupted by the development of side effects such as hypotension and allergic reaction. Time is muscle. We must choose a treatment strategy which is highly achievable and accessible to the population at large with known proven high efficacy and cost effectiveness. Tenecteplase should be adopted as the thrombolytic of choice while the PPCI service is being strengthened in the overall context of our local STEMI network.

REFERENCES

1. Nik Azlan NM, Mohamad Shazwan A, *et al.* Association of Risk Factors and Its Bleeding Complication for Tenecteplase Administered in Acute Myocardial Infarction (AMI). *Med J Malaysia.* 2013;68(5):381-383.
2. Van de Werf F, Cannon CP, Luyten A, *et al.* Safety assessment of single bolus administration of TNK tissue-plasminogen activator in acute myocardial infarction: the ASSENT-1 trial. *Am Heart J.* 1999; 137: 786-91.
3. Van De Werf F, Adgey J, Ardissino D, *et al.* Assessment of the Safety and Efficacy of a New Thrombolytic (ASSENT-2) *Lancet.* 1999;354:716-22.
4. Victor SM, Subban V, Alexander T, *et al.* A prospective, observational, multicentre study comparing tenecteplase facilitated PCI versus primary PCI in Indian patients with STEMI (STEPP—AMI). *Open Heart.* 2014;1:e000133.
5. Saran RK, Sethi R, Nagori M. Tenecteplase – The Best Among the Equals. *Indian Heart J.* 2009; 61: 454-8.

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