

## Urgent need for the introduction of Tenecteplase in Pakistan: A Call to action for improved stroke and MI Care

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*Madam*, Tenecteplase is a recombinant tissue plasminogen activator (tPA) that is used in many countries worldwide for reperfusion in acute *ischaemic* stroke (AIS) and STEMI because of its longer half-life and high fibrin specificity compared to other tPAs (e.g., alteplase) and Streptokinase.<sup>1</sup> Tenecteplase binds with fibrin-rich clots using its fibronectin finger-like and kringle-2 domains. The binding allows the protease domain to cleave the Arg/Val bond, converting plasminogen into plasmin, which breaks the fibrin matrix of the thrombus, resulting in clot dissolution. While Stroke and MI remain in the top 5 leading causes of death in Pakistan,<sup>2</sup> this highly efficient thrombolytic agent is not yet accessible in most hospitals for reperfusion in acute *ischaemic* stroke and myocardial infarction cases.

Many studies offer promising results, with tenecteplase being a better thrombolytic agent for acute *ischaemic* stroke and STEMI than alteplase. In India, studies declare tenecteplase effective and safe in STEMI patients with clinically successful thrombolysis reported in 80.67% of patients, while intracranial haemorrhage associated with tenecteplase was only 0.39%.<sup>3</sup> Tenecteplase is more efficient and at least as safe as alteplase for acute *ischaemic* stroke. According to a meta-analysis involving 2031 patients, the patients given Tenecteplase showed higher recanalization rates (ARD=0.11, 95%CI) and early neurological improvement (ARD=0.10, 95% CI) compared to patients given alteplase.<sup>4</sup> Tenecteplase also has a lower cost and a more favorable pharmacokinetic profile allowing bolus injection.

Regrettably, Tenecteplase is not yet accessible in Pakistan due to unclear political and administrative factors, and border restrictions. Studies claim that only six hospitals in Pakistan currently offer intravenous thrombolytic therapy with alteplase, all being private tertiary care hospitals.<sup>5</sup>

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While the world is adopting Tenecteplase instead of alteplase because of its better results, a more favourable side effects profile, and lower cost, our healthcare system is still dependent on SK for IV thrombolysis in cases of STEMI, which too is sometimes not available in many hospitals.

In light of available evidence suggesting Tenecteplase as a better alternative to alteplase and Streptokinase, the health government and hospital policymakers should consider introducing tenecteplase in Pakistan as the standard care for STEMI, New Onset LBBB (Left Bundle Branch Block), Acute *ischaemic* Stroke, Prosthetic Valve Thrombosis, Pulmonary Embolism, and Deep Venous Thrombosis.

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