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Opinion Article

Role of Thromboelastography in Acute Ischemic Stroke Patients

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DESCRIPTION

In emergency situations, Thromboelastography (TEG) offers a quick evaluation of the patient's hemostatic processes. TEG as a diagnostic tool for hemorrhagic transition in individuals with acute ischemic stroke has limited data. The dynamics of clot formation, strength, and lysis are measured by thromboelastography, which can also reveal details on clot consistency. TEG may therefore be beneficial for evaluating coagulation state and thrombolytic treatment response. The aetiology of ischemic stroke was divided into many categories using the Trial of ORG 10172 in Acute Stroke Treatment (TOAST) categorization. This categorization identifies Large Artery Atherosclerosis (LAA) as either severe stenosis (50%) or blockage of a main brain artery or branch cortical artery based on clinical and brain imaging data. Atherosclerosis without other possible causes of cardiogenic embolism may be to blame for this incidence. However, there was no evidence of 50% stenosis in intracranial or extracranial major arteries. Cardioembolism must suit the evidence of cardiac illness that has potential for embolism. Stroke of other determined cause (SOD) included coagulopathies, primary or parainfectious cerebral vasculitis, vasospasm associated with subarachnoid haemorrhage, a wide range of hereditary arteriopathies with diverse pathophysiologies (such as Moyamoya disease and fibromuscular dysplasia), and vasospasm associated with subarachnoid haemorrhage (including those associated with malignancy, genetic disorders, and medical therapy). Stroke of Unknown Origin (SUD) might have several causes, no known cause, or an insufficient inquiry.

TEG has been used since 1948, although it has only lately been practicable due to the development of user-friendly computerised analysis. The comprehensive picture of the whole coagulation process that TEG offers is one of its main benefits. A static endpoint is the basis for tests like the bleeding time, Prothrombin Time (PT), International Normalised Ratio (INR), Partial Thromboplastin Time (PTT), thrombin time, fibrinogen, and coagulation factor assays. TEG measures the dynamic coagulation process from the early clotting cascade through clot strength, providing comprehensive information on the balance between the two components of coagulation, thrombosis and lysis.

TEG data in stroke patients before and after tissue plasminogen activator therapy and to giving the essential basic data for additional investigation of TEG's capacity to identify clot subtype and predict response to tissue plasminogen activator therapy. Shorter K (the time from the end of the test until the clot reaches 20 mm, which is the rate of clot formation), greater angle (means the rate of fibrin deposition and cross-linking), and shorter R (means the time until the first clot is detected) are all indicators of faster clotting in AIS patients. A portion of them also developed clots with more potent platelet-fibrin matrices. All clot strength parameters decreased as a result of tissue plasminogen activator treatment TEG shows that a large number of AIS patients are hypercoagulable. Early Neurological Deterioration (END) in patients with AIS is predicted using TEG at the time of admission, and there may be a link between this prediction and the development of ischemia lesions. END was discovered in 29.3% of the 246 eligible individuals. It was looked at how patients getting alteplase for AIS experienced thromboelastographic changes. Patients who arrived to the emergency room with AIS symptoms and received intravenous alteplase were included in the prospective cohort research. Prior to the delivery of alteplase as well as 30, 60, 90, 120, and 150 minutes later, blood samples were taken. The lowest clot strength was detected 60 minutes after alteplase infusion began, while the highest fibrin accumulation inhibition was reported 30 minutes after alteplase infusion began. Within 150 minutes after the start of alteplase, the majority of patients revert to almost baseline parameters; however, two patients did not reach baseline levels within this time period. TEG is an effective method for identifying alterations in individuals who have received recombinant tissue plasminogen activator in their coagulation systems.

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