

Thrombolysis with IV Tissue Plasminogen Activator for Acute Ischemic Stroke in 91 Years Female with Previous Stroke: A Case Report

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Abstract

Stroke can occur at any age, but with advancing age, risk for acute ischemic stroke increases by many fold. Mortality in acute stroke has reduced in last few years. The reason for the success are multi-factorial which includes preventive approach and improved care within the first few hours of acute stroke through thrombolysis with IV rtPA. However, thrombolysis for ischemic stroke in elderly beyond 80 years has been a debatable issue. We recently thrombolysed a 91 years old female with history of stroke in window period. Post thrombolysis, she regained full motor power without complications. In conclusion, very elderly age with Diabetes Mellitus and/or history of stroke should not be a contraindication for IV alteplase treatment in patients with acute ischemic stroke. We should weigh the risks and benefits of IV alteplase to treat acute ischemic stroke in such patients.

Keywords: Acute ischemic stroke, Thrombolysis, Intravenous recombinant tissue plasminogen activator.

Abbreviations: PDT- Percutaneous Dilational Tracheostomy; ST- Surgical Tracheostomy; FOB- Fiberoptic Bronchoscopy.

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Introduction

Stroke is the fourth leading cause of morbidity and mortality worldwide, though percentage of mortality has reduced in last few years [1]. The reason for the success are multi-factorial and includes improved prevention and improved care within the first few hours of acute stroke through thrombolysis with intravenous recombinant Tissue Plasminogen Activator (IV rtPA). The US FDA approved the use of IV rtPA in 1996, partially on the basis of results of the 2-part NINDS rtPA stroke trial [2] where age more than 80 years is relative exclusion criteria for thrombolysis with rtPA in stroke patients. We recently thrombolysed a 91 years old female with history of stroke in window period. Post thrombolysis, she regained full motor power without complications. Thrombolysis in very elderly with more than 90 years of age with previous stroke has been rarely reported from Indian sub-continent.

Case Report

A 91 years old female with history of diabetes mellitus and hypertension, developed sudden onset weakness of left upper

and lower extremities along with deviation in angle of the mouth. She had experienced one episode of stroke (9 month prior to this presentation) with no residual deficit. She presented to our hospital within one hour of onset of symptoms. On admission, her blood pressure was 160/100 mm Hg. Her neurological examination revealed Glasgow coma scale of E4 V3 M6 and left upper and lower limb weakness affecting proximal and distal muscles with motor power of 2/5. Her initial NIHSS (National Institute of Health Stroke Scale) was 9. Her NCCT brain revealed encephalomalacia & gliosis in right parieto-occipital region with age related diffuse cerebral atrophy. Her 2D-ECHO revealed adequate systolic function (LVEF-55%) with no regional wall motion abnormality or any blood clot in any chamber. She was thrombolysed with IV rtPA 3mg IV bolus followed by 24mg IV, in accordance with her weight. She received 10mg of IV Labetolol before IV rtPA to control blood pressure. Her neurological deficit improved within 30 minutes of commencing therapy. Her motor power returned to normal. NIHSS was 3 at the end of therapy. Her CT scan of brain was repeated after completing 24 hours of therapy, which revealed no evidence of bleeding. Anti- platelet

(Ecosprin), statins and anti-hypertensive drugs were started. Her treatment course in hospital was uneventful and she was discharged in good neurological state. Her further follow up at seven days, 21 days and 3 months revealed no residual weakness and she was able to perform her activities of daily living.

Discussion

Although, stroke can occur at any age, but advancing age is a risk factor for acute ischemic stroke. About half of all stroke incidence occurs in people with age of more than 70 years and nearly a quarter occurs in people of more than 85 years age [3]. The Oxford vascular study indicated a 12 fold increase in the incidence of non-disabling and disabling ischemic stroke in the age group of 85 years and older compared to younger population [4]. The use of thrombolysis for ischemic stroke in elderly with age of more than 80 years has been a debatable subject.

Most of the pioneering randomized trials, including ATLANTIS, ECASS I, ECASS II and ECASS III [2,5-7] excluded patients beyond 80 years at age. Mateen FJ [8] and Mouradien [9] also concluded higher hospital mortality rate and fewer favourable outcomes in elderly patients, especially with more severe baseline NIHSS with IV rtPA in acute ischemic stroke. However, recent trials have shown comparable benefits with IV thrombolysis in patients with age beyond 80 years. The NINDS (National Institute of Neurological Disorder and Stroke) trial initially restricted enrollment of patients with age beyond 80 years. The age criterion was lifted after they enrolled 188 patients in part A of the trial, where in they enrolled only 42 very elderly patients [2]. Nishant K Mishra (2010) assessed and analyzed effect of age on response to thrombolysis with alteplase in acute ischemic stroke on 23,334 patients from SITS-ISTR (international stroke thrombolysis registry) with thrombolysis and 6166 patients from VISTA neuro-protection trials without thrombolysis (as controls) and concluded that thrombolysed patients with IV alteplase had better outcome than control patients, and this effect was independent of age [10]. A meta-analysis of 3 out of 12 trials including NINDS, ATLANTIS and ECASS I, II, III concluded that patients older than 80 years achieved similar benefit of IV thrombolysis when compared to those younger than 80 years, particularly when treated within 3 hours. Zeevi, et al. [11], Von Oosten brugge, et al. [12] Sylajja, et al. [13] and Joset yayan [14] also reported that rtPA is safe and efficacious with no excess risk of intra-cranial hemorrhage in carefully selected patients compared to younger patients.

Patients with history of Diabetes mellitus and prior stroke were a predictor for poor outcome after thrombolysis in acute ischemic stroke patients and post stroke hyperglycemia were thought to be associated with higher rate of post thrombolytic symptomatic intra-cerebral hemorrhages. Alteplase licencing approval in Europe does not advocate intravenous thrombolysis for diabetic ischemic stroke patients with previous cerebral infarct. Reiter M, et al. compared outcome data of matched thrombolysed and non-thrombolysed diabetic and non-diabetic patients in the Austrian Stroke Unit Registry and found no effect of diabetes or the interaction of diabetes with thrombolysis, although the effect of thrombolysis itself was highly significant. There was no significant difference in the number of post thrombolytic symptomatic intra-

cerebral hemorrhage between diabetic and non-diabetic strokes [15] Fuentes B, et al. [16] and Mishra NK, et al. [17] compared outcome of thrombolysis in acute ischemic stroke patients with history of stroke and diabetes mellitus. Both of them concluded that neither the presence of diabetes mellitus nor previous incidence of ischemic stroke or either combination had any impact on the risk of symptomatic intra-cerebral hemorrhage or on outcome of thrombolysis with alteplase in acute ischemic stroke. So, there is no statistical justification for the exclusion of these patients from receiving thrombolytic therapy.

Conclusion

In conclusion, very elderly age along with or without diabetes mellitus or prior stroke should not be a contraindication for IV alteplase treatment in patients with incidence of acute ischemic stroke. Since, an increased risk of hemorrhagic complications is feared with advancing age and hyperglycemia, these patients beyond 80 years had been denied the benefit of IV thrombolysis with rtPA. Selection of the treatment should be individualized. Both physicians and internist with expertise in stroke should discuss about possible outcomes and decide on course of treatment. We should weigh the both and benefits of IV alteplase to treat acute ischemic stroke in very elderly patients.

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