Pharmacological revascularization in acute stroke

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Abstract

Intravenous fibrinolytic therapy has been used for acute ischemic stroke with wide acceptance for more than 15 years. The aim of this presentation is to review the literature, clinical protocols and some common dilemmas regarding pharmacological revascularization in acute ischemic stroke. The story starts with the NINDS trial (1996) which supported the efficacy of recombinant tissue plasminogen activator (rtPA) not only in early neurological recovery but also in better functional outcome at 3 months. The protocol included the use of 0.9 mg/kg intravenous rTPA to a maximum of 90 mg within 3 hours of symptom onset. Afterwards, the ECASS III trial (2008) stretched the time window to 4.5 hours. The major risk of intravenous rtPA treatment remains symptomatic intracranial haemorrhage which occurs in 2-6% of patients. The SITS-ISTR (Safe Implementation of Thrombolysis in Stroke – International Stroke Thrombolysis Register), the largest community registry, reported that in 11 865 patients treated with rtPA, 56% of them were independent at 3 months. The last chapter in the rtPA saga was the meta-analysis published in 2012, which depicts the safety of rtPA across all age groups. Common dilemmas in clinical practice are patients presenting with minor or fluctuating deficits, on oral anticoagulants and other items of an extensive and cumbersome contra-indication list. Other pharmacological agents and Transcranial Ultrasound Fibrinolysis Augmentation will be shortly reviewed. In conclusion, timely given rtPA remains the primary treatment in acute ischemic stroke, but recent advances in mechanical revascularization may challenge this mainstream paradigm. The epilogue remains, thus far, unwritten.