

Influence of the thrombus attenuation in CT scans on endovascular therapy of acute ischemic stroke

The acute ischemic stroke causes 6,3 million deaths per year worldwide [38] and is the third most common cause of death in Germany [99]. In most cases it is caused by a blood clot (thrombus) which leads to an acute deficit of blood circulation and thus neurological deficits. Not all of the patients with stroke caused by a thromboembolism can be treated with the standard of care, Alteplase. Therefore, alternative treatment options are of utmost importance. Lately, intervention with so-called stent-retrievers has yielded promising results and the ongoing optimisation of the equipment may still improve the outcome. Due to demographic changes, the prevalence of ischemic strokes will most likely continue to increase and the optimisation of diagnostics and therapies are urgently needed.

This retrospective study was performed to investigate the correlation between the intracranial thrombus attenuation and the existence of a further extracranial thrombus. The thrombus attenuation was measured through CT scans for a total of 325 patients. Each patient was diagnosed with either an isolated clot of the M1-segment of the middle cerebral artery or with an additional occlusion of the internal carotid artery. Furthermore, the permeability for the contrast agent was measured through an angiographic CT.

The first results showed a clear dependence of high thrombus attenuation in the middle cerebral artery and an additional occlusion in the internal carotid artery. Thus, the thrombus density represents a suitable predilection factor for tandem occlusions but is not sufficient for a trustworthy diagnosis.

In addition, this study shows the independence between the success of the therapy and both the thrombus attenuation in CT and the permeability for the contrast agent. This confirms the independence of the new stent-retrievers towards the thrombus composition. Due to this advantage, it is possible that mechanical recanalization will be recommended as standard of care or even partly substitute the medical therapy in the future.