

Transcranial Ultrasound Thrombolysis System and Methods of Treating Stroke

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Technology description

Background

Approximately 700, 000 cases of stroke occur every year in the US, many of which result in death. Successful treatment of ischemic stroke, which accounts for 83% of all cases, depends on early recognition as well as treatment of the stroke within 2-4 hours of its onset. The primary approved method of treating ischemic strokes involves the use of a specific thrombolytic agent known as recombinant tissue plasminogen activator (r-tPA) by intravascular injection. However, this treatment is not commonly administered due to various factors such as delays in the recognition and diagnosis of stroke symptoms, delays in the transportation of patients to the appropriate medical facility, and the lack of availability of a specialized stroke neurologist on site. Furthermore, r-tPA administration is restricted to patients who do not have certain risk factors for bleeding. Moreover, physicians are reluctant to administer this drug due to an increased risk of an intracerebral hemorrhage.

Invention

Faculty at the University of Cincinnati have invented a system and method of treatment of ischemic stroke that overcomes the shortfalls of current treatment protocols for stroke. This consists of the use of a predetermined level of ultrasonic energy throughout the primary treatment zone covering most of the M1 and M2 branches of the middle cerebral artery in one hemisphere of the brain. A transducer is used to provide the ultrasonic energy. This system may be used in conjunction with the administration of r-tPA, which may or may not be encapsulated in microbubbles. This invention offers several advantages.

Advantages

Provides a quicker treatment of stroke as compared to current protocols

Does not require radiologic or imaging data to determine the specific location of the clot prior to treatment

Can be administered by front-line medical personnel without the presence of a specialized stroke neurologist

Institution

[University of Cincinnati](#)

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