X-Ray System for Use in Image-Guided Procedures

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Technology description

Although stroke afflicts more than 700,000 people in the United States annually, the only FDA-approved clinical treatment is intravenous administration of tissue plasminogen activator (tPA) within three hours of stroke onset. Recent studies have shown that the three hour window in which the benefits of tPA outweigh its risks can be lengthened.

Clinical outcome is often determined by the residual perfusion of affected tissues, rather than by the state of clot lysis as seen in conventional angiograms. However, despite the importance of perfusion measurements in acute stroke care, current imaging methods are inefficient, lack widespread practical utility and cannot be performed directly in the angiographic suite where intra-arterial thrombolysis is conducted.UW-Madison researchers have developed an x-ray imaging system that provides angiograms depicting a subject’ s vasculature along with parametric images that indicate perfusion of tissues. The system consists of a moveable x-ray source and an opposed, two-dimensional detector. It moves in a first scan path to acquire data from which a three-dimensional digital subtraction angiogram of the subject’ s vasculature is reconstructed. During the inflow of a contrast agent into the vasculature, the x-ray system moves in a second scan path to acquire images that indicate blood perfusion in the subject’ s tissue.
The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing an x-ray imaging system that provides improved three-dimensional anatomical imaging with time-resolved tomographic information on contrast dynamics.

Application area

Guiding therapy, planning surgical procedures and evaluating interventions in many clinical applications in addition to acute stroke care, including endovascular management of cerebral vasospasm, embolization of vascular malformations and determination of the effects of stent placement or angioplasty on cerebral perfusion

Advantages

Provides improved three-dimensional anatomical imaging with time-resolved tomographic information on contrast dynamics

Improves efficacy and reduces morbidity associated with minimally invasive medical procedures

Institution

Wisconsin Alumni Research Foundation

Inventors

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