

Abstract

Moustafa Hussein Aly

Cerebral Artery Vasospasm Detection using Transcranial Doppler Signal Analysis

Silent cerebral artery vasospasm in aneurysmal subarachnoid hemorrhage causes serious complications such as cerebral ischemia and death. A transcranial Doppler (TCD) ultrasound system is a noninvasive device that can effectively detect cerebral artery vasospasm as soon as it sets in, even before and in the absence of clinical deterioration. Continuous even daily TCD monitoring is challenging because of the operator expertise and certification required in the form of a trained sonographer and interpretive experience required in the form of an additionally trained and certified physician to perform these studies. This barrier exists because of a lack of automation for detection (without human intervention) of cerebral artery vasospasm using TCD ultrasound. To overcome this barrier, we present an algorithm that automates detection of cerebral artery vasospasm.