Abstract

My research is dedicated to improving our understanding and ability to treat patients with stroke. I have a multipronged approach, including developing personalized molecular diagnostic tools to improve a physician’s ability to diagnose stroke, and developing novel therapies to reduce the impact of stroke.

To improve the diagnosis and risk stratification of stroke I have evaluated and described RNA based biomarkers. To date these have been directed to aid with the diagnosis of stroke and TIA, to determine the cause of stroke, and to identify patients at risk for tPA related hemorrhagic transformation. Determining the diagnosis of stroke quickly permits rapid referral and triage of patients to hospitals specializing in the care of stroke. Faster time to treatment reduces the amount of brain damaged and thus improves patient outcomes. I have also developed RNA biomarkers to determine the cause of stroke. Preventing stroke is based on knowing the cause of stroke and treating it. Currently more than 35% of patients with stroke never have a cause identified despite extensive investigation. The RNA biomarkers I have described assign a cause of stroke to these patients, and thus may permit better implementation of stroke prevention therapy.

Protecting the brain from stroke injury is also an active are of my investigation. Following ischemic brain injury, the immune system is activated and responds to damaged brain tissue. Aspects of this response may contribute to brain injury in stroke. Whether modulating the immune system and the cellular response to ischemia to limit brain injury is an area I am currently investigation. I also have described the peripheral immune response that occurs in patients with ischemic stroke at the transcriptome level. I currently am evaluating several of these genes and associated pathways as potential novel treatment targets to modulate the immune system and reduce its damaging effects on the brain following stroke. This may lead to new therapies to reduce brain injury following stroke, and thus improve patient outcomes.

References


