Migraine and Stroke: Clinical association and experimental insight into the mechanisms

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Migraine is a highly prevalent chronic-episodic condition. Migraine sufferers are at higher risk of stroke than general population. The stroke risk increase associated with migraine is on par with other common vascular risk factors diabetes and hypertension. Mechanisms of this clinical association are unknown. Evidence strongly suggests that migraine aura rather than the headache is the risk biomarker. Aura is a transient neurological disturbance caused by spreading depression, an intense depolarization event that slowly spreads in brain tissue by way of chemical contiguity. This seminar will cover experimental and clinical data to explain the increased stroke risk in migraineurs, which all converge on spreading depression as the missing link between migraine aura and stroke.

Dr. Ayata is a vascular and critical care neurologist, and a clinician-scientist engaged in translational neurovascular research in brain injury, cerebral small vessel disease, and migraine, for almost 20 years. Dr. Ayata received his MD degree from Hacettepe University, Ankara, Turkey, in 1991. Following a postdoctoral fellowship under the mentorship of Prof. Michael A. Moskowitz at MGH, Boston, he completed his residency training in neurology at Tufts University, Boston, under the mentorship of Prof. Allan H. Ropper, and a clinical fellowship in stroke and neurocritical care at Massachusetts General Hospital, Boston, under the mentorship of Prof. Walter J. Koroshetz. His laboratory uses electrophysiological and multimodal optical imaging techniques in animal models of ischemic or hemorrhagic brain injury, as well as migraine, to dissect pathophysiology and test therapeutic interventions. His work has been supported by the NIH, AHA, Leducq Foundation, industry, private non-profit foundations and philanthropy. In over 160 peer-reviewed publications, his most notable contributions have been on spreading depolarizations in ischemic stroke and migraine, as well as preclinical testing of stroke therapeutics.