

MEDICAL BREAKTHROUGHS **RESEARCH SUMMARY**

TOPIC: VESSEL WALL IMAGING LIGHTS UP DANGEROUS ANEURYSMS
REPORT: MB #4818

STROKE/ANEURYSM: A stroke occurs when the blood supply to part of your brain is interrupted or reduced, preventing brain tissue from getting oxygen and nutrients. It results in the brain cells dying in minutes. There are two main causes of stroke. One is known as an ischemic stroke which is a blocked artery, a hemorrhagic stroke which is leaking or bursting of a blood vessel. There is also a transient ischemic attack which is a temporary disruption of blood flow to the brain and does not cause lasting symptoms. Signs and symptoms of a stroke include trouble speaking and understanding what others are saying, paralysis or numbness of the face, arm or leg, problems seeing in one or both eyes, headache, and trouble walking.

(Source: <https://www.mayoclinic.org/diseases-conditions/stroke/symptoms-causes/syc-20350113>)

DIAGNOSIS AND TRADITIONAL TREATMENT: Once you get to the hospital, your emergency team will try to determine what type of stroke you are having. You will quickly have a CT scan or other imaging test. Doctors need to rule out other possible causes of your symptoms, such as a brain tumor or a drug reaction. Some of the tests you may have include a physical exam, blood tests, computerized tomography (CT) scan, magnetic resonance imaging (MRI), carotid ultrasound, cerebral angiogram, and echocardiogram. To treat an ischemic stroke, doctors must quickly restore blood flow to your brain. This may be done with emergency IV medication, and/or emergency endovascular procedures including medications delivered directly to the brain, carotid endarterectomy, angioplasty, and stents. Emergency treatment of a hemorrhagic stroke focuses on controlling the bleeding and reducing pressure in your brain caused by the excess fluid. Treatment options include emergency measures, surgery, coiling (endovascular embolization), surgical AVM removal, and stereotactic radiosurgery.

(Source: <https://www.mayoclinic.org/diseases-conditions/stroke/diagnosis-treatment/drc->)

NEW TECHNOLOGY: About 10 years ago two groups came up with protocols on how to see images of the vessel wall and they started to look at several different disease processes using Bezael imaging. When they looked at the vessel lumen it looked quite different. "So, you would come to the hospital and we would use the usual (MRI) magnetic resonance imaging that you would get done on your brain. There are two MRI's. One is called a one point five Tesla magnet which is a low strength magnet. The other Tesla magnets must be done on a three T magnet because you need a stronger magnet to help resolve that very thin wall. Before the scan is conducted, you would get imaged without anything being injected and then we inject dye into your hand. The dye can be seen on the MRI scan and then you can look at the vessel wall and detect the enhancement. If you have evidence of bleeding in the brain, have multiple aneurysms and do not know which aneurysm bled this technique is extremely useful in figuring that out because the aneurysm that bled almost always enhances. It glows like a light bulb. So that is extremely helpful in the clinical context because you are going to target the right aneurysm," said Charles Matouk, MD, neurovascular surgeon at Yale.

(Source: Charles Matouk, MD., Chief of Neurovascular Surgery and Associate Professor at Yale University)

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If this story or any other Ivanhoe story has impacted your life or prompted you or someone you know to seek or change treatments, please let us know by contacting Marjorie Bekaert Thomas at mthomas@ivanhoe.com