Title: “Diagnosing Strokes In Patients With Vertigo”
Host: Dale Connelly
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“You’re listening to Brain Talk, from the Johns Hopkins Brain Science Institute.”

Dr. Newman-Toker: “It’s a very difficult problem for emergency physicians to diagnose patients with dizziness. The list of possible diseases causing it is long, and a small but non-trivial number of them have very dangerous disorders such as stroke.”

Dale: "Dr. David Newman-Toker is an associate professor of neurology at Johns Hopkins University. According to Dr. Newman-Toker, four million people turn up in emergency rooms each year complaining of dizziness. But an inability to properly diagnose these patients means that one in three stroke victims will not be spotted.

Today on Brain Talk: diagnosing strokes in patients with vertigo.

Dr. Newman-Toker says 'in a group of 100 people complaining of dizziness, there can be as many as 50 different causes.'”

Dr. Newman-Toker: “About 5% of all patients with dizziness in the emergency department have an underlying stroke as a cause and a vast majority of those strokes are ischemic strokes or lack of blood flow in the back part of the brain that controls balance, specifically the brain stem and cerebellum.”

Dale: "And CAT scans – or CT scans – are the most commonly used tool to try to figure out the cause of dizziness.”

Dr. Newman-Toker: “So it appears that nearly 50% of all patients with dizziness in the emergency department undergo CT scans despite the fact this is probably not an effective test in these patients. Best estimates suggest that in the first 24 hours after a stroke CT scans miss more than 80% of the strokes.”

Dale: "Aside from the individual health cost of a missed diagnosis, this costs the health care system billions of dollars each year. A study by Dr. Newman-Toker shows that a solution to save lives, and to cut costs, is for doctors to examine patients’ eye movements carefully.”

Dr. Newman-Toker: “Specifically we look for three abnormal eye movements that relate to inner ear balance disturbance, and what these eye movements do is enable us to determine where the problem is.”

Dale: "This is because the most common causes of dizziness are benign inner ear diseases. And, Dr. Newman-Toker explains, ‘these inner ear problems can affect the way the eyes move.’”
Dr. Newman-Toker: “The physiology is such that when problems are located in the inner ear the eyes become abnormal in one way and if the problem is in the brain, the eye movements become abnormal in a slightly different way.”

Dale: "Being able to spot these subtle differences in eye movements just might help doctors determine if a patient has symptoms of an inner ear problem… rather than a stroke.

Dr. Newman-Toker says ‘using a device that measures these eye movements could help cut down on the number of CT scans being used, and help save lives.’"

Dr. Newman-Toker: “Yes, we’ve published some preliminary studies showing that use of such technology in the emergency department is obviously safe and highly accurate. So far we’ve studied about 26 patients in total, and we’ve had perfect discrimination between those with inner ear problems and those with stroke using the device.”

Dale: "'What's needed now', says Dr. Newman-Toker, 'are clinical trials to prove this kind of technology is effective, and for more doctors to routinely adopt the use of eye tests in emergency rooms.'"

Dr. Newman-Toker: “Now there are emergency physicians who practice using these techniques. We haven’t reached critical mass where emergency physicians routinely use these approaches to evaluate patients. I think that’s going to change as we go forward because availability of new technology that measures these eye movements quantitatively will transform our ability to make these diagnoses confidently.”

Dale: "For more information on dizziness and strokes, go to brainscienceinstitute.org. I’m Dale Connelly and this is Brain Talk from Johns Hopkins University.”