

Small Doses

Hair may signal pending heart attack

Researchers found that hair's level of cortisol – known as the stress hormone – is a strong predictor of heart attack

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In the not too distant future, your family doctor may pluck a hair from your head to see if you're in imminent danger of a heart attack.

That's because **your hair contains an accurate record of your body's production of cortisol** – a hormone that surges through your body when you're under **stress**. And stress can be the trigger for a potentially deadly cardiac event.

Researchers at the University of Western Ontario say they have developed a test to measure cortisol levels in hair. What's more, they have used the test to show that the stress hormone can be exceedingly high in the months preceding a heart attack. "Intuitively, we know that stress is not good for you, but it's not easy to measure," said Gideon Koren, who holds a research chair at Western's Schulich School of Medicine & Dentistry.

Traditionally, cortisol has been measured from blood, urine or saliva samples, but these tests provide a limited picture of stress levels for only a few days. And psychological questionnaires aren't much better at reliably gauging an individual's stress levels over a long period of time.

So Dr. Koren and his research colleagues latched on to the idea of testing a shaft of hair, which incorporates a wide range of bodily substances – including cortisol – into its structure as it grows. "We know that on average hair grows one centimetre a month, and so if we take a hair sample six centimetres long, we can determine stress levels for six months by measuring the cortisol level in the hair," he said.

With their newly developed test in hand, the researchers recruited 56 men who had been admitted to hospital after suffering a heart attack. Shafts of hair were taken from each volunteer and compared with samples collected from 56 male patients who didn't have heart attacks. The study revealed "significantly higher" cortisol levels in the heart attack patients compared with the control group, according the results published Friday in the journal *Stress*.

Dr. Koren noted that many factors can contribute to the emergence of heart disease, including high blood pressure, diabetes, smoking, cholesterol levels and genetic predisposition – traits shared by a lot of the men in the two groups of the study. When these various risk factors were taken into

account, hair cortisol content emerged as the strongest predictor of a heart attack, the researchers report.

Of course, studies involving a broader range of patients, including women, will be needed to establish the test's true worth. But it holds out the promise that doctors will be able to pinpoint those patients who need prompt stress management – and possibly help them prevent a heart attack.

Faulty memory

You're likely familiar with the term “a senior's moment” – those minor lapses in memory that seem to increase with age. How about destination amnesia? Well, you're wrong if you think it means you can't recall where you went on your last vacation. It's a relatively new phrase, coined by Nigel Gopie, a cognitive scientist at Baycrest's Rotman Research Institute in Toronto. He says it essentially means forgetting who you've told certain information. (Think of “destination” in terms of where the information has gone.) It's the kind of mental glitch that can result in serious communication problems.

“Destination amnesia is characterized by falsely believing you've told someone something, such as believing you've told your daughter about needing a ride to an appointment, when you had actually told a neighbour,” Dr. Gopie says. It can also lead to some awkward social situations. If you can't keep track of your conversations, you're likely to tell the same story to someone numerous times. “Everyone makes this kind of error, but as we get older it happens a lot more frequently,” Dr. Gopie says.

In a recent series of experiments, Dr. Gopie and research colleagues Fergus Craik and Lynn Hasher, compared the destination memories of younger (aged 18 to 30) and older (60 to 83) adults. The findings, published in the journal *Psychology and Aging*, revealed that the performance of the older folks was on average 21 per cent worst than the younger participants.

Why are older folks more prone to destination amnesia? The ability to focus and pay attention declines with age, according to Dr. Gopie. As a result, older adults use up most of their attention skills on telling a story and may not be able to make a reliable mental note of the person with whom they have spoken.

And yet, in these circumstances, the older adults may feel quite certain they haven't told a story twice to the same person. Dr. Gopie said that destination amnesia is just a natural part of aging. “So maybe we can have a little compassion when an older person tries to tell us the same story twice.”

MS linked to seasons

A new study suggests that multiple sclerosis patients are more likely to experience a flare-up of their condition during spring and summer than at other times of the year. The findings, published in the journal *Neurology*, are based on an analysis of MRI brain scans conducted on 44 MS patients who lived in the Boston area. Each patient received an average of 22 scans over the period of a year. The data were collected in the early 1990s, before the introduction of new drugs that can alter the natural course of the disease.

The researchers charted MS activity by observing the changing number of brain lesions, which show up as bright spots on the MRI scans. “We found dramatically higher activity in the warmer part of the year – the spring and summer – compared to the fall and winter,” said the study's lead author, Dominik Meier of Brigham and Women's Hospital in Boston.

The researchers aren't sure why MS activity seems to change with the seasons. And Dr. Meier cautioned that the research relies on a fairly small sample of patients. The results need to be confirmed with much larger studies.

Even so, an editorial accompanying the study says the conclusions should be taken into account by researchers who are planning to do studies on new MS treatments. If a study ran from spring to winter, it may appear that lesions decreased due to the treatment when the improvement may have been the result of a change in seasons.

Long-term trials are needed to properly evaluate any therapy. And that is certainly worth keeping in mind when considering the current controversy over "liberation therapy" pioneered by Italian doctor Paolo Zamboni, who says MS can be treated with an operation that improves blood flow from the brain.
