

Stress hormone measured in hair may predict who is likely to suffer from cardiovascular diseases

May 19 2023



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New research being presented at this year's European Congress on Obesity (ECO) in Dublin, Ireland (17-20 May) suggests that

glucocorticoid levels (a class of steroid hormones secreted as a response to stress) present in the hair of individuals may indicate which of them are more likely to suffer from cardiovascular diseases (CVD) in the future.

"There is a tremendous amount of evidence that [chronic stress](#) is a serious factor in determining overall health. Now our findings indicate that people with higher long-term [hair](#) glucocorticoid levels appear significantly more likely to develop heart and circulatory diseases in particular," says lead author Dr. Eline van der Valk from Erasmus University Medical Center Rotterdam in the Netherlands.

Long-term levels of scalp hair cortisol and its inactive form, hair cortisone, are increasingly used biomarkers that represent the cumulative exposure to glucocorticoids over the previous months.

There is a large body of evidence indicating that the stress hormones cortisol and cortisone affect the body's metabolism and fat distribution. But data on these [stress hormone levels](#) and their effect on long-term CVD outcomes is scarce.

To find out more, researchers analyzed cortisol and cortisone levels in 6,341 hair samples from adult men and women (aged 18 and older) enrolled in Lifelines—a multi-generational study including over 167,000 participants from the northern population of the Netherlands.

Study participants' hair was tested, and participants were followed for an average 5-7 years to assess the long-term relationship between cortisol and cortisone levels and incident CVD. During this time, there were 133 CVD events.

Researchers adjusted for factors known to be linked with increased risk of CVD including age, sex, waist circumference, smoking, [blood](#)

[pressure](#), and type 2 diabetes.

The researchers found that people with higher long-term cortisone levels were twice as likely to experience a cardiovascular event like a stroke or [heart attack](#), and this rose to over three times as likely in those aged 57 years or younger.

However, in the oldest half of CVD cases (aged 57 and older), hair cortisone and cortisol were not strongly linked to incident CVD.

"Our hope is that hair analysis may ultimately prove useful as a test that can help clinicians determine which individuals might be at high risk of developing [cardiovascular disease](#). Then, perhaps in the future targeting the effects of stress hormones in the body could become a new treatment target," says Professor Elisabeth van Rossum, the principal investigator of the study from Erasmus University Medical Center.

The authors acknowledge several limitations of the study, including that it is observational and does not prove that [stress](#) causes CVD but indicate that they are linked. They also note that most participants self-identified as white and were from one area of the Netherlands so the findings might not be generalizable to other populations. And although age, sex, [waist circumference](#), smoking, blood pressure, and type 2 diabetes were adjusted for in the analysis, there may be other unmeasured factors that may have influenced the results.

More information: Conference: scai.org/scai-2023-scientific-sessions

Provided by European Association for the Study of Obesity

Citation: Stress hormone measured in hair may predict who is likely to suffer from

cardiovascular diseases (2023, May 19) retrieved 12 May 2024 from
<https://medicalxpress.com/news/2023-05-stress-hormone-hair-cardiovascular-diseases.html>

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