HEALTH

Stress Increases Risk of Heart Attack. Here's How.

Researchers have finally pinpointed the link between stress and heart attacks. Stress can lead to white blood cell overproduction which can in turn increase the risk of heart attack, a new study shows. ***iStockPhoto***

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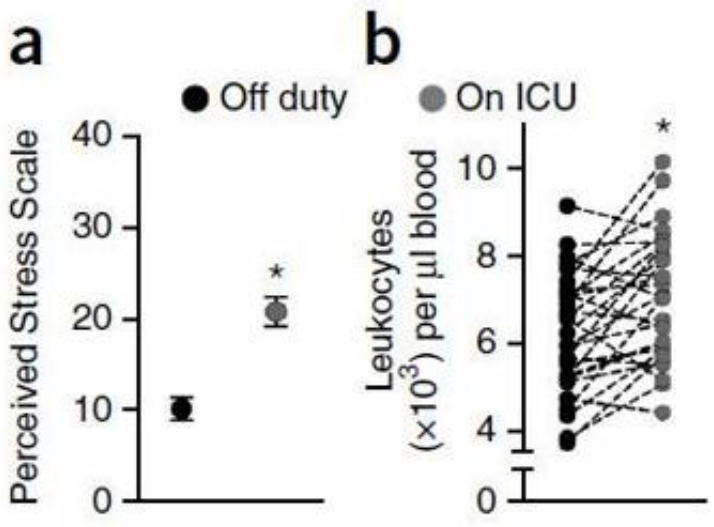
Doctor's have long suspected a link between stress and heart attacks but researchers may have just proved it. A new study conducted by researchers at Massachusetts General Hospital and Harvard Medical School shows stress increases production of disease-promoting white blood cells.



Chronic stress increases proliferation os HSPCs in the bone marrow. (a) Cohen's Perceived Stress Scale score in medical ICU residents either off duty or on ICU duty (n=10 off duty, n=15 on ICU, Student's t-test). (b) Blood leukocytes in residents (n=29, Wilcoxon test). ***2014 Nature America, Inc.***

The study, published in Nature Medicine, analyzed blood samples of 29 medical residents working in the Intensive Care Unit at University Hospital in Freiburg, Germany. Samples were taken when the residents were both on-duty (making life-or-death decisions was deemed pretty stressful) and off-duty (relatively unstressed) to compare the differences. The samples taken when the residents were stressed out showed higher levels of blood leukocytes, or white blood cells, than those taken when they weren't stressed.

The researchers then repeated the study on mice. To stress the mice out, they tilted their cages and placed them in confined or overcrowded spaces. Again, the samples showed an increase in white blood cells when the mice were stressed, verifying their earlier findings.

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So stress increases white blood cell production. *How does that relate to heart failure?*

At the right levels, white blood cells defend the body against sickness. In excess, they do the opposite.

"High levels of white blood cells may lead to progression of atherosclerosis, plaque rupture and myocardial infarction," Dr. Matthias Nahrendorf, a co-author of the study, said. (For those of us who weren't biology majors, myocardial infarction means heart attack). "The latter implies that a part of the heart muscle, which pumps the blood with every beat, dies off. This may cause heart failure, either right away if the infarct is large, or later on through maladaptive processes. The heart tries to compensate for the loss of contractile muscle tissue but over time this compensation leads to a larger heart, which is weaker."

While the study proves the link between chronic stress and heart failure, it is difficult to judge how serious the stress-induced risk is.

"I think it is fair to say that stress by itself is not very dangerous," Nahrendorf said. "However, in conjunction with other risk factors such as high blood cholesterol, obesity, and smoking it can probably add substantially to the overall risk for a heart attack."

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