

Biological changes in suicidal patients

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Depressed and suicidal individuals have low levels of the stress hormone cortisol in their blood and saliva. They also have substances in their spinal fluid that suggest there is increased inflammation in the brain. These findings could help to develop new methods for diagnosing and treating suicidal patients.

Doctor Daniel Lindqvist from the Psychoimmunology Unit at Lund University, Sweden, is presenting these results in his PhD thesis. He is part of a research group led by Dr Lena Brundin, which sees inflammation in the brain as a strong contributory factor to depression. This is a new theory that challenges the prevalent view that depression is only due to a lack of the substances serotonin and noradrenaline.

"However, current serotonin-based medication cures far from all of the patients treated. We believe that inflammation is the first step in the development of depression and that this in turn affects serotonin and noradrenaline", says Daniel Lindqvist.

One of the articles in his thesis shows that suicidal patients had unusually high levels of inflammation-related substances (cytokines) in their spinal fluid. The levels were highest in patients who had been diagnosed with [major depression](#) or who had made violent [suicide attempts](#), e.g. attempting to hang themselves.

The research group at the Division of Psychiatry in Lund is now getting ready to conduct a treatment study based on its theory. [Depressed patients](#) will be treated with anti-inflammatory medication in the hope

that their symptoms will be reduced.

The researchers believe that the cause of the inflammation that sets off the process could vary. It could be serious influenza, or an auto-immune disease such as [rheumatism](#), or a serious allergy that leads to inflammation in the body. A certain genetic vulnerability is probably also required, i.e. certain gene variants that make some people more sensitive than others.

Other studies in Daniel Lindqvist's thesis show that patients with depression and a serious intention of committing suicide had low levels of the stress hormone cortisol in their blood. The cortisol levels were also low in saliva samples from individuals several years after a suicide attempt. This has been interpreted to mean that the depressed patients' mental suffering led to a sort of 'breakdown' in the stress system, resulting in low levels of stress hormones.

"It is easy to take and analyse blood and [saliva](#) samples. Cortisol and [inflammation](#) substances could therefore be used as markers for suicide risk and depth of depression", says Daniel Lindqvist.

Provided by Lund University

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