

A different kind of anesthesia a possible treatment for stress-induced cardiomyopathy

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Stress induced cardiomyopathy after cerebral hemorrhage has been shown to increase the risk of further brain damage. These patients can now be identified by a simple blood test, and a possible treatment for stress induced cardiomyopathy has been discovered - a different kind of anesthesia than that currently being used. A new doctoral thesis at University of Gothenburg has explored these issues.

Stress induced [cardiomyopathy](#) is a relatively recently discovered disease where part of the heart muscle ceases to function and results in the heart having reduced pumping capacity. Approximately 90 percent of those affected are upper middle-aged women. The onset is similar to a heart attack, with chest pain and difficulty breathing, but stress induced cardiomyopathy follows a different course.

With stress induced heart failure, the heart spontaneously recovers within a few weeks and thus the prognosis has been seen as good; but, new findings show the prognosis to be approximately the same as for acute ischemic heart disease.

Followed for two years

In a new thesis from Sahlgrenska Academy, all [patients](#) from the region that suffered a specific type of cerebral hemorrhage (subarachnoid hemorrhage) were followed for two years. In conjunction with the hemorrhage, patients experience a strong stress component. Stress induced cardiomyopathy is therefore relatively common (10-20 percent

of the patients) following this type of cerebral hemorrhage, which can cause significant brain damage.

"We saw that patients with stress induced cardiomyopathy had an increased risk of further brain damage in the aftermath of a cerebral hemorrhage and had a worse long-term prognosis, even after we made adjustments for other risk factors," says Jonatan Oras, PhD Student at Sahlgrenska Academy, University of Gothenburg.

Biomarkers were identified

In the thesis, two biomarkers were identified that can be used to identify patients who suffer from stress induced heart failure.

"With a [blood test](#), we are now able to quickly identify patients with stress induced heart failure and apply the right measures sooner," says Jonatan Oras.

A possible treatment

In the experimental part of the thesis, an animal model was used with rats to find a possible treatment for stress induced heart failure. It was found that if the animals were anesthetized with a particular anesthetic (isoflurane), they did not develop [heart failure](#) and the [heart](#) muscle retained its elasticity and pumping capacity.

"When we used other anesthetics, including those currently in use in healthcare, we saw no cardioprotective effect. This is the first potential cardioprotective treatment for stress induced cardiomyopathy to be presented," says Jonatan Oras.

Further studies of this possible treatment for stress induced cardiomyopathy on patients at risk of developing stress induced

cardiomyopathy should be conducted," Jonatan Oras points out.

Facts

Subarachnoid hemorrhage is a type of brain hemorrhage that is caused by a malformation of one of the brain's blood vessels bursting. It affects younger persons and can result in significant brain damage.

Approximately 40 percent of patients die from the hemorrhage and a third of those that do survive sustain incapacitating [brain damage](#) that renders them unable to manage their daily lives. In connection with [subarachnoid hemorrhage](#), the patients often experience a strong stress component and therefore, many of these patients suffer from stress induced cardiomyopathy in the aftermath.

The thesis 'Stress-induced cardiomyopathy – clinical and experimental studies' was defended on November 13.

More information: Link to thesis - hdl.handle.net/2077/39562

Provided by University of Gothenburg

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