

Study reveals a new indicator of survival outcome after cardiac arrest

15 May 2018



Credit: University of Luxembourg

Research carried out by the University of Luxembourg, the National Rescue Services, the Centre Hospitalier de Luxembourg and the Luxembourg Institute of Health has found that brain-body communication predicts survival after cardiac arrest.

While the continuous interaction between heart and [brain](#) is known to ensure everyday functions, this study is the first to provide evidence that this interaction can be used to predict prognosis for [patients](#).

Cardiac [arrest](#) is associated with very high mortality rates. Even if spontaneous circulation is successfully restored, only about 50 percent of patients survive. Death after [cardiac arrest](#) most frequently occurs because of brain damage and irreversible damage to the heart. "These high mortality rates highlight the urgent need for reliable predictors of survival chances. Such [information](#) at an early stage after cardiac arrest would help to improve treatment approaches," explains Dr. André Schulz, psychologist at the University of Luxembourg.

Capturing the communication between heart and brain

The brain and the heart continuously communicate with each other. Ascending information from the heart is required to regulate activity of the cardiovascular system to engage in various demands in everyday life. If this [communication](#) is disrupted, the regulation of the cardiovascular system is rendered dysfunctional and may result in cardiovascular disease, such as hypertension or myocardial dysfunction. Ascending neural information from the heart is represented in the brain. This representation is reflected by heartbeat-evoked potentials. If the communication between the heart and the brain is disrupted, heartbeat-evoked potentials are significantly weaker.

"Measuring the nerve transmission between the heart and the brain directly would be very invasive, so can hardly be done on living human beings," explains André Schulz. "Instead, we used a non-invasive method based on brain waves, because even in an unconscious state, the patient's brain processes information."

Study results

For the study, heartbeat-evoked potentials were assessed in 55 cardiac arrest patients. Those patients surviving the first six months after cardiac arrest had much stronger heartbeat-evoked potentials directly after restoring spontaneous circulation than those patients who died within the first half year after cardiac arrest. This important finding illustrates that adequate brain-[heart](#) communication (i.e. cardiac interception) is required to preserve cardiovascular health.

In the near future, heartbeat-evoked potentials may serve as prognostic indicator of survival outcome after cardiac arrest.

More information: André Schulz et al. Late

heartbeat-evoked potentials are associated with survival after cardiac arrest, *Resuscitation* (2018).
DOI: 10.1016/j.resuscitation.2018.02.009

Provided by University of Luxembourg

APA citation: Study reveals a new indicator of survival outcome after cardiac arrest (2018, May 15) retrieved 28 October 2021 from <https://medicalxpress.com/news/2018-05-reveals-indicator-survival-outcome-cardiac.html>

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