

# Vitamin D deficiency increases poor brain function after cardiac arrest by sevenfold

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Vitamin D deficiency increases the risk of poor brain function after sudden cardiac arrest by seven-fold, according to research presented at Acute Cardiovascular Care 2014 by Dr Jin Wi from Korea. Vitamin D deficiency also led to a higher chance of dying after sudden cardiac arrest.

Acute Cardiovascular Care is the annual meeting of the Acute Cardiovascular Care Association (ACCA) of the European Society of Cardiology (ESC) and takes place 18-20 October in Geneva, Switzerland.

Dr Wi said: "In patients resuscitated after sudden [cardiac arrest](#), recovery of neurological function is very important, as well as survival. Vitamin D deficiency has been reported to be related to the risk of having various cardiovascular diseases, including sudden cardiac arrest. We investigated the association of vitamin D deficiency with neurologic outcome after sudden cardiac arrest, a topic on which there is no information so far."

The researchers prospectively analysed clinical data from all unconscious patients resuscitated from sudden cardiac arrest of presumed cardiac cause at Severance Cardiovascular Hospital in Seoul, Korea. Neurologic outcome was assessed by the Cerebral Performance Category (CPC) score at 6 months after discharge.<sup>1</sup> Good neurologic outcome was defined as a CPC score of 1 or 2, whereas poor neurological outcome was defined as a CPC score of 3 to 5. Vitamin D deficiency was defined

as 25-hydroxyvitamin D less than 10 ng/mL.

The study included 53 patients. Bystander cardiopulmonary resuscitation (CPR) was performed in 41 patients (77%). The first monitored heart rhythm was shockable in 36 patients (68%) and non-shockable in 17 patients (32%). The average vitamin D level was 10.3 ng/mL and 31 patients (59%) were deficient.

Patients with a poor neurological outcome had a significantly lower vitamin D level (7.9 ng/mL) compared to those with a good neurological outcome (12.4 ng/mL) ( $p=0.002$ ). The researchers found that 65% of patients with vitamin D deficiency had a poor neurological outcome at 6 months after discharge compared to 23% of patients with healthy vitamin D levels. They also found that 29% of patients with vitamin D deficiency had died at 6 months compared to none of the patients with good vitamin D levels ( $p=0.007$ ).

Dr Wi said: "Patients with vitamin D deficiency were more likely to have a poor neurological outcome or die after sudden cardiac arrest than those who were not deficient. Nearly one-third of the patients who were deficient in vitamin D had died 6 months after their cardiac arrest, whereas all patients with sufficient vitamin D levels were still alive."

The researchers conducted a multivariate logistic analysis to assess the impact of a number of factors on neurological outcome after sudden cardiac arrest. They found that vitamin D deficiency independently predicted poor neurological outcome with an odds ratio of 7.13.

Dr Wi said: "Vitamin D deficiency increased the risk of poor neurological outcome after sudden cardiac arrest by 7-fold. The only factors that had a greater impact on poor neurological outcome were the absence of bystander CPR or having a first monitored heart rhythm that was non-shockable."

He added: "Our findings suggest that vitamin D deficiency should be avoided, especially in people with a high risk of sudden cardiac arrest. People are at higher risk if they have a personal or family history of heart disease including heart rhythm disorders, congenital heart defects and cardiac arrest. Other risk factors for cardiac arrest include smoking, obesity, diabetes, a sedentary lifestyle, high blood pressure and high cholesterol, and drinking too much alcohol."

Dr Wi continued: "Vitamin D is found in oily fish, such as salmon, sardines, and mackerel, eggs, fortified fat spreads, fortified breakfast cereals and powdered milk. Most of our vitamin D stores are made by the body when our skin reacts to sunlight."

He concluded: "A large randomised clinical trial is needed to find out whether supplements of vitamin D can protect high risk groups from having a [sudden cardiac arrest](#)."

Provided by European Society of Cardiology

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