

# Electric shocks can cause neurologic and neuropsychological symptoms

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Canadian researchers have shown that an electric shock ranging from 120 to 52,000 volts can cause neurologic and neuropsychological symptoms in humans. Following an electrical injury, some patients may show various emotional and behavioral aftereffects, such as memory loss and symptoms of depression.

The study, supported by a grant from Hydro-Québec and conducted by clinicians from the Université de Montréal's Faculty of Medicine and Sainte-Justine Hospital, is published in the May edition of the American Journal of Emergency Medicine.

ER pediatrician and toxicologist Dr. Benoit Bailey, in collaboration with pediatricians Pierre Gaudreault and Robert Thivierge, assessed the prevalence of short-term neurologic and neuropsychological symptoms as well as one year after an electric shock severe enough to require 24-hour cardiac monitoring. Their goal was to explore whether any symptoms were associated with risk factors such as transthoracic current, neuromuscular spasms (tetany), loss of consciousness or shock of 1000 volts or more.

Twenty-one hospital centers throughout Quebec participated in the study conducted from October 2000 to November 2004. Some 134 patients, aged one to 67, took part in the study.

Participants included 26 children, as well as 88 people who were victims of work-related accidents. The majority of electric shocks reported (48

per cent) were from domestic causes (120 to 240 volts), while 38 per cent were industrial (347 to 1200 volts).

Telephone follow-ups were conducted by a research nurse to evaluate the appearance of neurologic and neuropsychological symptoms: general fatigue, pains, muscular weakness, numbness of the extremities, headaches, memory loss, psychological symptoms, dizziness, or depression.

An initial follow-up was completed in the months after the electric shock, while a second interview was conducted a year later.

At the short-term follow-up, 30 of 114 patients (26%) complained of new neurologic or neuropsychological symptoms. The most common symptoms were general fatigue and pain. At the one-year follow-up, 24 of 86 patients (28%) still suffered from these symptoms; a dozen of these even developed new symptoms.

“The cause of the neurologic and neuropsychological symptoms after an electrical shock is unclear,” says Dr. Bailey. “Several mechanisms are probably involved. We did observe that symptoms from electric shocks are similar to symptoms following a cranial trauma. That’s why ER doctors should inform their patients who suffer an electric shock of possible symptoms, in the short and medium term, and conduct similar follow-ups as they would with cranial trauma patients.”

Source: University of Montreal

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