

Testing the Epilepsy Drug Perampanel to Prevent Seizures After Cardiac Arrest



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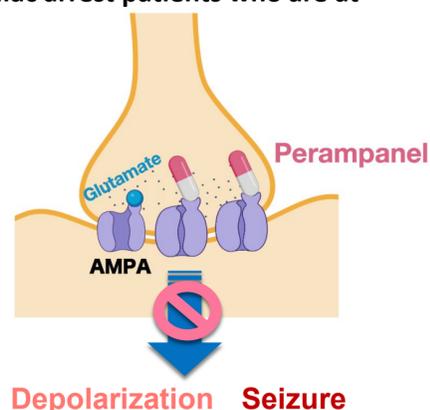
PROPOSED TREATMENT

Incorporating perampanel to prevent seizures in critically ill cardiac arrest patients who are at high risk for myoclonic seizures.

No studies to date have focused on myoclonic seizure prevention after cardiac arrest. Perampanel, an FDA approved drug for epilepsy patients, treats seizures by blocking the AMPA glutamate receptor, which reduces activation of neurons. Blocking glutamate receptors has also been implicated in reducing spreading depolarizations, a neurophysiological mechanism associated with increase in secondary brain injury after acute stroke, trauma, and cardiac arrest.

Recent observational studies in cardiac arrest patients have shown that perampanel may be beneficial for treating refractory myoclonic seizures, with resolution reported in up to 75% of cases. However, it is not known if early use of perampanel can prevent or improve treatment for myoclonic seizures, nor if early perampanel treatment is associated with serious adverse events in these critically ill patients.

We hypothesize that blocking the AMPA glutamate receptor with perampanel in cardiac arrest patients will be associated with lower incidence of myoclonic seizures, thereby improving outcomes.



SUMMARY STATEMENT

Evaluating the safety and feasibility of perampanel for myoclonic seizure prevention following resuscitation from cardiac arrest

DISEASE/CONDITION

Cardiac arrest affects 500,000 Americans every year, and 100,000 survive to hospital admission. The opioid epidemic has increased the burden of cardiac arrest in vulnerable populations, with 40% of cardiac arrests at the San Francisco General Hospital being associated with overdose from opioids, amphetamines, and other drugs. Up to one-third of patients surviving resuscitation will develop seizures or seizure-like brain activity.

Myoclonic seizures are associated with severe muscle jerks and are the most common seizure type after a cardiac arrest. Myoclonic seizures after cardiac arrest have very high morbidity and mortality, and most patients with these seizures will have irreversible brain injury.

CURRENT TREATMENT

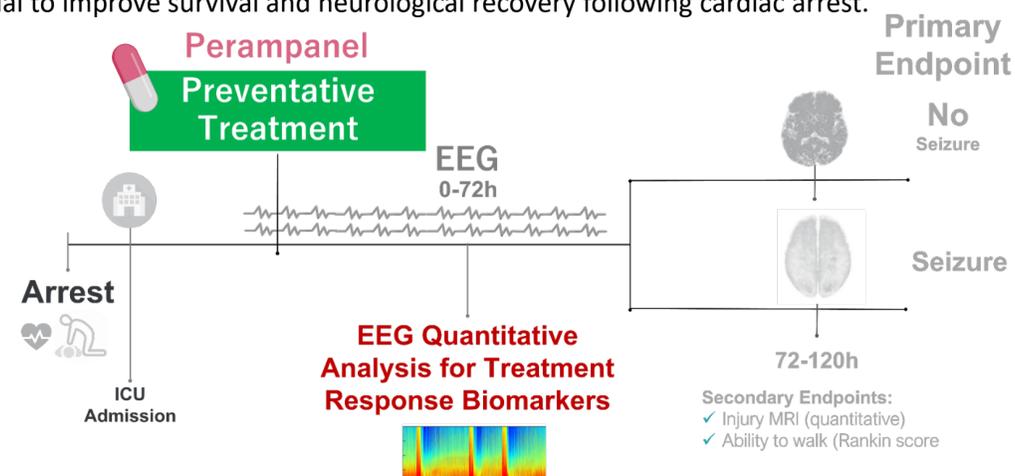
Several anti-seizure and anesthetic medications have been used for myoclonic seizure management. However, there is no specific treatment for myoclonic seizures post-cardiac arrest. Myoclonic seizures are often unaffected by current therapies and therefore associated with poor outcomes. In addition, there are no research studies that have focused on treatments to prevent myoclonic seizures after cardiac arrest.

PROJECT

A pilot, randomized, double-blind, placebo-controlled clinical trial to evaluate the safety and feasibility of perampanel use for myoclonic seizure prevention after cardiac arrest.

Our study will enroll 52 patients in either placebo or perampanel treatment arms, and patients will receive treatment for 7 days following resuscitation after cardiac arrest. Patients will be followed for 6 months after treatment to determine their neurological recovery among those patients given perampanel compared to placebo.

This study will address key knowledge gaps and provide the necessary preliminary data for future clinical trials. Development of a treatment capable of preventing myoclonic seizures without leading to medical complications has the potential to improve survival and neurological recovery following cardiac arrest.



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October 6, 2022

