Methods for the Treatment of a Traumatic Central Nervous System Injury

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Technology description

Technical Summary

According to recent estimates by the Centers for Disease Control and Prevention, approximately 1.4 million people suffer from traumatic brain injury (TBI) annually, and up to 50,000 of these patients die as a result of their condition. Critical to reducing the number of brain injury-related mortalities is the delivery of an effective therapy in the early hours after injury occurs.

This invention provides a method of reducing neurological damage to the brain following traumatic injury or stroke. Sudden shock to the brain disrupts the NMDA, glutamate, cholinergic, acetylcholine, and GABA A receptor systems. Emory scientists have discovered that administration of progesterone or its metabolites provides a neuroprotective effect that inhibits the loss of neuronal activity and minimizes neurodegeneration. Administering progesterone or a progesterone metabolite has been shown to reduce cerebral edema and the inflammatory response, both leading causes of death from traumatic injuries. The consequence of reduced inflammation is a reduction in intracranial pressure, brain swelling, and the decreased subsequent release of neurotoxic substances, which yields a more favorable patient prognosis. Neurosteroids such as progesterone, progestin or aprogestin metabolite can stop microglia from releasing harmful free radicals, modulate the effects of glutamate, stimulate myclin production, and potentiate GABA transmission. A potential result is dramatically improved patient outcome following stroke of head trauma.

Application area

Use of progesterone for the treatment of traumatic brain injury (TBI).

Advantages

Progesterone has a demonstrated therapeutic benefit to TBI patients including reduced mortality, and a potential to reduce secondary injury and enhance functional recovery.

These compounds are inexpensive, safe for administration to both man and women, and have only minor side-effects in contrast to current therapies.

Institution

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