Convulsive seizures following subdural application of fibrin sealant containing tranexamic acid in a rat model.

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Publication Date: 2000

Abstract:

OBJECTIVES: Tranexamic acid (t-AMCA) has been shown to cause severe convulsions in humans and cats when applied topically to the central nervous system. We wanted to determine whether pure t-AMCA or fibrin sealant (FS) containing t-AMCA would induce similar effects when applied to the spinal cord in a rat model. METHODS: Following low-thoracic laminectomy, the dura was incised to expose the dorsal surface of the lumbar enlargement. Rats were allocated to one of the following treatments: 1) t-AMCA (10 mg/ml), 2) vehicle (phosphate buffered saline), 3) FS containing t-AMCA, 4) FS containing aprotinin. The response of the rats was evaluated based on neurological and behavioral observations. Additionally, motor function was scored in the rats that had received FS. RESULTS: Application of either 10 mg/ml t-AMCA or FS containing t-AMCA caused severe hind limb spasms that developed into spontaneous generalized convulsions. Two of the three rats that had received FS containing t-AMCA died of respiratory failure. In contrast, application of vehicle or FS containing aprotinin did not cause any abnormal conditions of the animals. CONCLUSION: Tranexamic acid may cause severe complications when used in the central nervous system. Thus, fibrin sealants containing t-AMCA should not be used in neurosurgery.