# ABSTRACT


## Changes in motor function and seizure susceptibility after photothrombic ischemic stroke in immature rat

Perinatal stroke is a common cerebrovascular disorder affecting one in every 4000 births, typically associated with sequelae that include motor and cognitive deficits and long term comorbidities including epilepsy. We sought to determine the effect of perinatal induced stroke on motor function and seizure susceptibility in rats.

Photothrombotic model of stroke was used in rat at postnatal day 7. Firstly we induced ischemic lesions of different extends to assess the consequences of stroke on motor function, locomotion and its correlation to morphological changes after stroke. To this end, paradigms sensitive to sensorimotor changes were used; histological changes were also assessed. Secondly, with the use of pure cortical lesions, seizure susceptibility in PTZ elicited models of epileptic seizures was analysed. For seizure occurrence, latency and severity, two different concentrations of PTZ (60 and 100 mg/kg) were administered subcutaneously in two different age groups at P 12 and P 25. In addition, episodes of rhythmic EEG activity were registered at P 25 following successive 20- and 40-mg/kg doses of PTZ administered interperitonealy.

Our data depicted two kinds of lesions with different shapes and sizes relative to laser illumination. Motor performances of rats submitted to stroke were poor compared to controls; differences in motor performance were also noted between rats with small and large lesions. Cortical photothrombotic lesions induced in immature rats, affected seizures elicited by pentetrazol, later during postnatal development. Major changes were found in a model of human absences induced by a low dose of PTZ and an easy transition from EEG spike-and-wave rhythm into minimal clonic seizures.

A clear relationship between motor impairments and lesion extend was observed; indicating that brain injuries greatly affect motor function in rats. Cortical ischemic lesion during early development also had an impact on the sensitivity PTZ; decreasing thresholds and increasing susceptibility to PTZ-induced seizures, just 5 and 18 days post photothrombotic insults.