

## Hypertension as a Clinically-Relevant Adult Comorbidity Worsening Neurobehavioral Deficits and Pathological Outcomes After Pediatric Traumatic Brain Injury

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### Abstract:

**Introduction:** About 500,000 yearly emergency-room visits are due to childhood traumatic brain injury (TBI), which may render cognitive and emotional sequelae. Half of adults are diagnosed with hypertension, due to diet, obesity, smoking, or genetic factors, which causes cardiovascular complications. Pediatric TBI prior to developing a comorbidity like hypertension has not been investigated. **Hypothesis:** We hypothesized that hypertensive rats will perform inferiorly post-injury to normotensive rats. **Methods:** Spontaneously Hypertensive (SHR) and normotensive Wistar male rats received either a moderate, right-parietal controlled cortical impact (CCI) or a sham injury at postnatal day 17. Four adulthood tasks measured post-TBI neurobehaviors after hypertension becomes expressed: the 3-Choice serial reaction time test (3-CSRT, sustained attention) at 4 months post-pediatric TBI, T-maze attentional set-shifting (behavioral flexibility), open field testing (OFT, anxiety), and the shock-probe defensive burying test (SPDB, active and passive coping). Lesion and bilateral ventricle volumes were assessed.