

## ECG patterns and cognitive outcomes following mild traumatic brain injury

**Student – Ali Sadeghi**

**Advisor – Kalev Freeman, MD, PhD**

**Department of Surgery**

**Importance:** Annually over 2,500 Vermonters visit Emergency Departments with concussion or Traumatic Brain Injury (TBI). Cardiovascular complications are known to be associated with TBI such as arrhythmia, hypertension, and ischemia, yet the prevalence and pattern of these complications have not been fully determined. **Objectives:** Goals of the study include guiding patients with persistent problems after head injury to appropriate resources. A step towards this objective is to determine the neurological outcomes of head-injured patients at 1 month following the injury. We also sought to investigate electrocardiogram (ECG) changes after TBI. **Methods:** We performed an observational, case-control of ECG's and cognitive outcomes in adult patients with a concussion compared to controls. Adult patients who presented with a concussion to the ED within 24 hours of injury and were eligible. We obtained ECGs and performed ImpACT testing on enrolled patients on presentation and again at a one month follow-up. Matching of cases and controls was addressed by recruiting a Age- and Sex-matched control subjects who presented to the Emergency Department with lower extremity injuries and no head injury. **Results:** Of the TBI-patients students, 23% of had transient ECG changes. The ImpACT test exposed that 38% of the follow-up patients had continual symptoms. **Conclusions:** Our investigation is ongoing, currently focused on recruiting matching patients as controls. The results of these studies could improve understanding of TBI.