**TITLE:** Optic Nerve Sheath Diameter evaluation for increased intracranial pressure in hepatic encephalopathy patients and association with morbidity/mortality

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**RESEARCH PROJECT DESCRIPTION**

Optic ultrasound evaluating the optic nerve sheath diameter can be used to determine if a patient is at risk of increased intracranial pressures in various pathologic states. Brain edema leading to increased intracranial pressures is a cause of death in acute liver failure through mechanisms such as osmotic derangements in astrocytes, changes in cellular metabolism, and alterations in blood flow. Frequently invasive intracranial pressure monitoring is difficult due to bleeding risk of neurosurgical procedures. ICP monitoring was found to increase the amount of vasopressor use and ICP related medications, but was associated with significant complications rate (10.3% bleeding). Previous studies have indicated higher complication rates. Optic nerve sheath diameter evaluation may be an alternative non-invasive method of evaluating patients with acute liver failure and encephalopathy. We will compare optic nerve sheath diameter findings on ultrasound with various clinical parameters involving neurological status and hypothesize that patients not suspected of having increased intracranial pressures have better outcomes. Also it may allow improved decision making for the emergency liver transplant candidate, as persistent reductions in cerebral perfusion pressure indicate ischemic brain injury and poor neurological outcomes. The medical student will assist with IRB, obtaining optic nerve sheath diameters after adequate training, and interpretation of data obtained.

**References:**


Kamat et al. Invasive intracranial pressure monitoring is a useful adjunct to management of severe hepatic encephalopathy associated with pediatric acute liver failure. Pediatric Crit Care Med 2012 Vol. 13, No. 1: e33-e38