

OPI ULTRASOUND AS A RAPID DIAGNOSTIC TOOL TO PREDICT RAISED INTRACRANIAL PRESSURE

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INTRODUCTION

Traditionally, ophthalmoscope and tonometry has been used to assess patient with symptoms suspicious of raised increased intracranial pressure. However, direct ophthalmoscope gives limited view of the retina and tonometry, requiring a dark yet conducive environment to be accurately performed which is difficult to be achieved in the emergency department. Optic nerve sheath diameter (ONSD) is a highly sensitive yet specific measurement in predicting raised ICP via an ocular ultrasound.

CASE:

A 14 year old Malay boy, with no known co-morbidities, presented to the Emergency Department post trauma day 5 after a high impact motor vehicle accident. ONSD measured was 8mm (raised) bilaterally and also papilledema. Immediate CT Brain done, and reported to have large left frontal extradural hemorrhage with left frontal bone fracture. Patient proceeded with an uneventful neurosurgical op.

RESULTS:

Using standard ultrasound machine, place the probe onto patient's closed eyes, with copious amount of gel, tilt superior and inferiorly, visualizing the anterior and posterior aspect of the eye. Then, scan the eye using vertical approach, with probe marker up toward the patient's head. Scan side to side to ensure no other eye pathology.

DISCUSSION

The normal optic sheath is up to about 5mm in diameter. An ONSD more than 6mm, indicating ICP more than 20mmHg. Take an average of 2 measurements, if more than 5mm, raised a high index of suspicion for raised ICP. An additional finding would be papilledema which would guild our finding in ONSD 5–6mm. Multiple studies has showed that ocular ultrasound benefit in neurosurgical patients, providing a positive correlation between the diameter of the optic nerve sheath and the ICP measurements. 95% sensitivity and 80% specificity were the most specific in those patients with history of traumatic brain injury.

CONCLUSION

With ultrasound, one can easily detect a raised intracranial pressure and may be very helpful in cases with atypical clinical presentation or clinical history such as in trauma in pediatrics and also idiopathic intracranial hypertension