PARALLEL SESSION 6:
POCUS

TIME: 15:45 – 17:15

17:00 - 17:15

Transcranial Doppler: Point-of-care ultrasound (POCUS) for Cerebral Vasospasm

Dr. Navindra Raj Bista (Nepal)
Assistant Professor, Department of Anaesthesiology
Institute of Medicine (IOM)

Abstract:

Spasm of cerebral vessels is one of secondary complications in Aneurysmal subarachnoid hemorrhage (aSAH) during the neurocritical care. It contributes for high morbidity and mortality accounting 15% to 20% risk of stroke or death.1 The vasospasm and subsequent various degree of delayed cerebral ischemia have a negative impact on quality of patient's clinical outcome and adds financial burden.

Transcranial doppler point-of-care ultrasound (TCD-POCUS) has been one of the important screening tools for detection of vasospasm in aSAH.2 It provides a non-invasive bedside, portable, and radiation-free technique to review cerebral circulation complementing neuromonitoring. It based on the hemodynamic principle to study of intracranial artery flow where the velocity of arterial blood flow is inversely related to its lumen area. Duplex technique (transcranial color-coded duplex sonography, TCCS) are remarkable during TCD.3

Initially, TCD was introduced by Rune Aaslid in 1982 for determining the flow velocities in the basal cerebral arteries mainly middle cerebral artery (MCA) by placing low-frequency ultrasound doppler probe in the temporal area just above the zygomatic arch. This study resulted the velocity in the MCA, proximal anterior (ACA) and posterior (PCA) cerebral arteries of 50 healthy subjects was 62 +/- 12, 51 +/0 12, and 44 +/- 11 cm/sec, respectively.4 Since then this tool has been growing its popularity as a diagnostic, monitoring, and therapeutic tool from conventional TCD to advancement in color M-mode TCD, transcranial color-coded sonography (TCCS), three-dimensional TCCS and contrast-enhanced TCD.5 However, operator experience on ultrasound and its interpretation will make a difference on its clinical outcome.

In conclusion, TCD-POCUS is a quick and portable technique to detect vasospasm, and accurate velocities in the management of aSAH. Its applied clinical value is more contributary in resource limited setting of neurocritical care