

Neurointensive Care: An Overview

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Editorial

Neurocritical care (or neurointensive care) is a medical specialty that focuses on treating life-threatening nervous system diseases as well as identifying, preventing, and treating secondary brain injury.

History

Many attempts to cure head injuries have been made throughout history, including trepanned skulls discovered in ancient Egypt and descriptions of procedures to reduce brain swelling in ancient Greek writings. Intensive care began in the mid-twentieth century with centres to treat the poliomyelitis outbreak. These early respiratory care units used a negative and positive pressure unit known as the "Iron Lung" to assist patients with breathing and significantly reduced Polio mortality. When Dr. Bjrn Aage Ibsen, a Danish physician, employed tracheostomy and positive pressure manual breathing to keep polio patients alive in the face of an influx of patients and insufficient resources, he "birthed the intensive care unit" (only one iron Lung) [1].

Dr. Dandy Walker of Johns Hopkins University established the first neurological acute care unit in 1929. Dr. Walker recognised that certain surgical patients could benefit from specific postoperative neurosurgery monitoring and therapy. Dr. Walker's unit proved to be more beneficial to postoperative patients than to neurologic patients. In the 1950s, Dr. Safar established the first intensive care unit in the United States in Baltimore. The value of specialised care in respiratory and cardiac ICUs led to the formation of the Society of Critical Care Medicine in the 1970s. This group established guidelines for complex medical problems and treatments. The requirement for specialised monitoring and treatment led to the creation of neurologic intensive care units over time [2].

Scope

Neurointensivists are doctors that specialise in this sort of medicine and have training in a variety of specialties, including neurology, anesthesiology, emergency medicine, internal medicine, and neurosurgery. Strokes, ruptured aneurysms, brain and spinal cord injury from trauma, seizures (especially those that last for a long time- status epilepticus, and/or involve trauma to the patient, i.e., due to a stroke or a fall), swelling of the brain (cerebral edema), infections of the brain (encephalitis), and the brain's or spine's meninges (meningitis), and brain tumours (especially mal (such as the diaphragm). Neurointensivists manage medical issues that may arise in their patients, including those of the heart, lung, kidneys, or any other body system, as well as infection treatment [3].

Neurointensive care centers

Neurological Intensive Care Facilities (NICUs) are specialty units in a few tertiary care hospitals that specialise in the treatment of critically ill neurological

and post-neurological surgical patients. NICUs are designed to give early and aggressive medical measures, such as pain management, airway management, ventilation, anticoagulation, increased ICP, cardiovascular stability, and secondary brain injury management. Impaired consciousness, impaired ability to maintain airway, growing respiratory weakening, requirement for mechanical ventilation, seizure are all admission criteria. Monitoring of neurologic function in critically ill individuals with radiologic evidence of increased ICP. Neuro-ICUs are being used more frequently at Tertiary referral hospitals. Therapeutic hypothermia, which has been found to enhance long-term neurological outcomes following cardiac arrest, is one of the key reasons for the rising usage of Neuro-ICUs [4].

Neurointensive care procedures

Hypothermia: Between one-third and half of persons with coronary artery disease will experience a heart attack. Seven to thirty percent of people who have their hearts stopped have a positive neurological result when they leave the hospital (conscious, normal brain function, alert, capable of normal life). When patients' body temperatures are reduced to 32-34 degrees within six hours after arrival at the hospital, the number of patients with no major brain injury doubles, and patient survival rises.

Neurological monitoring : ICP (subarachnoid haemorrhages, TBI, Hydrocephalus, Stroke, CNS infection, Hepatic failure), multimodality monitoring to monitor disease and prevent secondary injury in states that are insensitive to neurological exam or conditions confounded by sedation, neuromuscular blockade, and coma.

Intracranial pressure (ICP) management: Ventricular catheter to monitor brain oxygen, glucose, and PH concentrations. Hypertonic serum, barbiturates, hypothermia, and decompressive hemi-craniotomy are some of the therapy possibilities [5].

Common neurointensive care illnesses and treatments

Traumatic brain injury: Sedation, ICP monitoring and management, decompressive craniectomy, hyperosmolar treatment, and maintaining hemodynamic stability are all recommended for traumatic brain injury.

Stroke: Airway management, blood pressure and cerebral perfusion maintenance, intravenous fluid management, temperature control, seizure prevention, nutrition, ICP management, and medical complications treatment.

Subarachnoid hemorrhage: Determine the aetiology of the haemorrhage, repair any aneurysms or arteriovenous malformations that may be present, monitor for clinical deterioration, manage systemic consequences, maintain cerebral perfusion pressure, avoid vasospasm, and transition the patient to angiographic clipping. Termination of seizures, prevention of seizure recurrence, treatment of seizure aetiology, management of sequelae, hemodynamic stability monitoring, and continuous electroencephalography are all part of the treatment for status epilepticus (EEG) [5].

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Conflict of Interest

None.

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