Dalhousie University Neurosurgery
Resident Rotation Objectives: Pediatric Neurosurgery

Medical Expert

KNOWLEDGE

1. The embryological development of the skull and spine, and how congenital anomalies arise from disorders of this process.

2. The embryological development of the nervous system, and how congenital anomalies arise from disorders of this process.

3. The physiology of normal cerebrospinal fluid (CSF) circulation and the disorders of CSF physiology (i.e., hydrocephalus).

4. The basic histopathology of pediatric nervous system neoplasms, as well as their overall management and prognosis.

5. The pathophysiology of neurologic symptoms and signs (e.g., seizures, spasticity, Horner's syndrome, papilledema).

CLINICAL SKILLS

1. The practiced discipline of obtaining a detailed history from a pediatric patient and his/her family and carrying out a neurological examination in order to provide a comprehensive differential diagnosis and localization of diseases affecting the central nervous system.

2. The demonstration of skills in ordering and interpreting appropriate general diagnostic tests (hematology, diagnostic imaging, chemistry, etc.) for the satisfactory management of the pediatric patient.

3. The provision of ongoing post-operative assessment and care.

4. Appropriate management of patients who are victims of non-accidental trauma.

TECHNICAL SKILLS

At the completion of training, the neurosurgery resident must have demonstrated a thorough understanding of the surgical anatomy, and the technical ability to satisfactorily and safely perform the following procedures in pediatric patients:

1. Management of hydrocephalus and CSF sampling techniques including the following:
    a. Ventricular tap in the patient with an open fontanelle
    b. lumbar puncture
    c. shunt tap
    d. placement of ventricular access device
    e. external ventricular drain
    f. endoscopic third ventriculostomy

2. Evacuation of subdural collections by burr hole, percutaneous tap in the patient with an open fontanelle, or by placement of subdural-peritoneal shunt.

3. Placement of intracranial pressure monitoring devices.

4. Management of Chiari malformation and syringomyelia.

5. Craniotomy for the management of trauma, tumor, infection, and vascular disorders.

6. Correction of craniosynostosis.

7. Management of skull fractures including simple linear skull fractures, compound depressed fractures, and growing skull fractures.

8. Neck dissection appropriate to exposure of the contents of the carotid sheath.

9. Management of pediatric lumbar disc pathology.

10. Operative and non-operative management of pediatric spine and spinal cord trauma.

11. Laminotomy/laminoplasty or laminectomy for management of intradural or extradural spinal tumors.

12. Management of occult spinal dysraphism including split cord malformations, lipomyelomeningocele, dermal sinus tracts, fatty filum.

13. Management of myelomeningocele, meningocele, and encephalocele.

14. Selective dorsal rhizotomy and implantation of intrathecal baclofen pumps for the management of spasticity.

Communicator

1. Establish therapeutic relationships with patients and their families.

2. Document appropriate histories, physical examinations, and progress notes.

3. Provide age-appropriate information to patients, and provide information to parents that will support their involvement in decision-making.

4. Prepare written documentation for referring physicians in a timely, concise, and collegial manner.

Collaborator

1. Consult effectively with other physicians (referring physicians and other specialists) as well as other health care professionals (including nurses, social workers, physiotherapists, occupational therapists, speech language pathologists, audiologists, respiratory therapists, psychologists,-orthotists, and child life specialists).

2. Contribute to interdisciplinary activities such as spina bifida clinic, craniofacial clinic, and pediatric brain tumor clinic.

Leader

1. The neurosurgical resident should be prepared to provide advice on the efficient use of resources (including diagnostic imaging, inter-hospital transfers, and hospital admission) for the management of pediatric neurosurgery patients.

Health Advocate

1. Maintain an index of suspicion for non-accidental trauma when evaluating young trauma patients.

2. Use available resources to assist with patients' educational, socio-economic, and psychological challenges.

Scholar

1. Demonstrate self-directed learning with critical appraisal of relevant literature.

2. Facilitate the learning of patients and their families, colleagues, and other health care professionals.

Professional

1. Demonstrate the characteristics of integrity, honesty, compassion, and ethical conduct.

2. Meets deadlines, is punctual, monitors patients according to the needs of their

condition, and provides follow-up.

3. Understands any limitations of knowledge or skill, accepts constructive feedback, and corrects deficiencies appropriately.