

NEUROPATHOLOGY CONTENT SPECIFICATIONS

New Validated Practical Knowledge

Normal Development, Structure, and Function

1. Role of specific genes in brain development

Congenital Diseases of the Nervous System

1. Identification of teratogens causing CNS malformations

Degenerative and Demyelinating Diseases

1. Frontotemporal degeneration (FTLD)
 - categorization of FTLD by protein deposition
 - FTLD-MAPtau with tau inclusions
 - FTLD-U with ubiquitin-positive/tau negative inclusions
 - FTLD negative for both tau and ubiquitin inclusions
 - consensus criteria for FTLD
2. Clinical and pathologic overlap between FTLD-U and ALS
3. Third consensus conference for the diagnosis of Lewy body disorders
4. Utility of new marks (tau, alpha-synuclein, TDP-43) in neurodegenerative diseases
5. Inflammation and vascular aspects of Alzheimer disease
6. New concepts in multiple sclerosis
 - demyelination in grey matter
 - role of aquaporin 4
 - remyelination frequency
 - NMO serum testing

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Donahue JE, Johanson CD. Inflammation and vascular aspects of Alzheimer's disease. *J Neuropathol Exp Neurol* 2008; 67:261-270.

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Infectious and Inflammatory Diseases

1. New concepts about prion disease
use of western blot and immunohistochemistry
2. Utility of in-situ hybridization for identification/confirmation of infectious agents
(PML, HSV, etc)

Trauma

1. Amyloid precursor protein in head injury

Neoplasm

1. Use of molecular testing for prognosis and/or treatment in specific brain tumors
 - oligodendrogliomas -- 1p/19q
 - INI-1/snf5 in AT/RT
 - EGFR amplification in malignant gliomas
 - PTEN loss in high grade astrocytomas
 - decreased MGMT expression in high grade astrocytomas
2. Newly described neoplasms
 - pituicytoma
 - chordoid glioma
 - liponeurocytoma
 - extraventricular neurocytoma
 - desmoplastic infantile ganglioglioma
 - chordoid meningioma
 - papillary ganglioneurocytoma
 - dysembryoplastic neuroepithelial tumor
 - PXA with anaplastic features
 - atypical teratoid/rhabdoid tumor
 - medulloblastoma variants
 - rosetted glioneuronal tumor
3. Histologic criteria for grading meningiomas
4. EBV in situ hybridization for lymphomas and disorders in immunosuppressed patients
5. DNA repair enzymes involved in therapeutic resistance
 - decreased MGMT expression in high grade astrocytomas

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Neuromuscular

1. Classification of molecular muscle pathology
2. Inclusion body myopathy in older adults

Other

1. Genetic markers associated with epilepsy

Fundamental Knowledge

1. Normal structure and function of the brain and spinal cord.
2. Congenital malformations and diseases of the central and peripheral nervous system
3. Infectious diseases
4. Degenerative and demyelinating diseases.
5. Primary and metastatic neoplasms involving central, peripheral, and autonomic nervous systems and muscle
6. Traumatic injuries of the brain and spinal cord
7. Myopathies
 - Congenital
 - Metabolic/toxic
 - Inflammatory
8. Muscular dystrophies
9. Diseases of the neuromuscular junction
10. Ophthalmic pathology