Neuropathy-A clinico pathological overview

Dr. Debashis Chakraborty

MD (Medicine), DNB (Neurology), MRCP (UK)
Director of advisory committee of Fortis healthcare, India
Consultant Neurologist
Fortis Hospital, Anandpur, Kolkata

Peripheral neuropathy is a common complication of a variety of diseases and treatments, including diabetes, cancer chemotherapy, infectious and autoimmune causes. Peripheral neuropathy is not a single, homogenous disease, but is instead a mix of different clinical presentations, natural histories, and pathologies. Patients may present with motor insufficiency (weakness), sensory abnormalities (numbness, parethesias, hyperalgesia/allodynia, pain), autonomic symptoms, or a combination of all, often depending on the particular disease. These various constellations of neurological symptoms suggest motor, sensory, and autonomic axons have differing susceptibilities to various disease processes. Additionally, while most neuropathies are chronic, slowly progressive conditions, some neuropathies have a more acute onset and gradual recovery.

Despite the fundamental difference between these insults, peripheral neuropathy develops as a combination of just six primary mechanisms: altered metabolism, covalent modification, altered organelle function and reactive oxygen species formation, altered intracellular and inflammatory signalling, slowed axonal transport, and altered ion channel dynamics and expression. All of these pathways converge to lead to axon dysfunction and symptoms of neuropathy.

Few neuropathies are present in isolation, but, rather, are often secondary to other systemic illnesses, including diabetes and infectious causes such as human immunodeficiency virus and hepatitis C virus. Additionally, peripheral neuropathies may be iatrogenic, arising from the toxicity of drugs given as part of antiretroviral or chemotherapy regiments.

Discussion on Clinical Overview (Symptoms and signs) of Selected Diseases namely

Diabetic neuropathy
Chemotherapy induced peripheral neurotoxicity
HIV and non-HIV infectious neuropathies
Autoimmune neuropathies
Congenital neuropathies
Traumatic / Compressive neuropathies

Short discussion on types of neuropathies where Myelin vs Axonal damage is the chief cause.

How to investigate neuropathies

Management in brief of few neuropathies

Future scope - Insights into the common disease insults that converge on the axonal degeneration pathway promise to facilitate the development of therapeutics that may be effective against other mechanisms of neurodegeneration.