Peripheral Neuropathies

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A Practical Approach

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Preface and Abbreviations

Peripheral neuropathy is a general term, which refers to disorders of the peripheral nervous system. The peripheral nervous system consists of all nerves distal to the spinal cord, and includes nerve fibers that either originate in the spinal cord (motor neurons) or terminate in the spinal cord (sensory nerves). It also includes autonomic nerve fibers. The pattern of nerve involvement in peripheral neuropathies includes:

- Radiculopathies
- Plexopathies
- Mononeuropathies
- Polyneuropathies

Polyneuropathies represent the largest group, and the term "poly" refers to generalized and homogenous involvement of many nerves, and usually following a distal to proximal pattern. There are a large number of underlying causes (many of which remain unidentified despite efforts), and, unfortunately, few polyneuropathies can be stopped or reversed with treatment.

Disorders of peripheral nerves are relatively common, but it is difficult to determine true prevalence numbers for different types of neuropathies as study designs and reporting metrics are not uniform. Prevalence estimates include: polyneuropathy in people >55 years of age ~8,000/100,000; diabetic neuropathy 300/100,000; hereditary neuropathy 8–41/100,000; and carpal tunnel syndrome 5,800/100,000 for women and 600/100,00 for men (Martyn and Hughes, 1997).

The evaluation process of a patient with a neuropathy has many possible approaches. This book is based on personal experience using a structured approach. This approach is not wholly unique, but is applied here in a rigorous fashion for each type of neuropathy (Barohn, 1998). This book is written to be concise and readily usable, and covers relatively common types of neuropathies, and hence descriptions and discussions are focused. Chapters are organized in sections. The first section is basic background information on peripheral nerve anatomy and pathology, followed by structured approaches to the clinical and electrodiagnostic evaluation, and concludes with informative laboratory tests. While no classification scheme of neuropathies is entirely satisfactory, clinical sections are organized by the patterns of nerve involvement listed above. Chapter content for each type of neuropathy is based on underlying pathology, clinical features, diagnostic evaluation (including electrodiagnostic and informative laboratory tests), and ends with management and treatment options.

References have been chosen to be maximally informative for a topic, and not to support every feature listed. There is an extensive literature on all aspects of peripheral neuropathies, and many articles represent observations, case reviews, or small patient series, and thus many statements and conclusions in the literature may not be based on sound evidence. Selected references concentrate on evidence-based data, or those with a focus on data from high-level studies.

The book is written to be helpful to a spectrum of clinicians, those in training (neurology and rehabilitation residents, fellows in clinical neurophysiology and neuromuscular medicine), and practitioners, whether they perform electrodiagnostic studies or evaluate and manage the clinical aspects of peripheral neuropathies.

Abbreviations have been kept to a minimum, and the following, which are familiar to the intended audience, are defined here at the outset:

CMAP	compound muscle action potential
EMG	needle electromyography
IVIG	intravenous immune globulin
MRC	Medical Research Counsel
MRI	magnetic resonance imaging
SNAP	sensory nerve action potential

References

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