

Contents

Preface: Peripheral Neuropathy: More than Numb Feet xiii

Peter H. Jin

A Clinical Approach to Disease of Peripheral Nerve 197

Rajeev Motiwala

 Video content accompanies this article at <http://www.geriatric.theclinics.com>.

Peripheral neuropathy is one of the most prevalent neurologic conditions encountered by neurologists and nonneurologists. Geriatricians and primary care physicians often face the task of screening patients for early neuropathy when they have underlying conditions such as diabetes mellitus and evaluating patients who report new symptoms that suggest neuropathy. An understanding about different forms of neuropathies based on anatomic pattern and type of nerve fiber involvement and ability to perform basic neurologic examination reliably can help determine how to pursue further investigations and identify those patients who are likely to benefit from early specialist referral.

Electrodiagnostic Testing for Disorders of Peripheral Nerves 209

Joseph M. Choi and Gianluca Di Maria

Nerve conduction studies and electromyography are useful diagnostic tools that neurologists use to diagnose diseases of the peripheral nerves, neuromuscular junction, and muscles. These tests are considered an extension of clinical history and examination, and their results should always be interpreted with the clinical context. Neuromuscular diseases are common and affect a large proportion of the elderly population. With an aging population in expansion, these diseases are expected to become even more prevalent. It is important to highlight the basics of electrophysiology and provide a reference for providers who are planning to send their patients to electromyographers for these studies.

The Role of Imaging for Disorders of Peripheral Nerve 223

Natalia L. Gonzalez and Lisa D. Hobson-Webb

Peripheral nerve imaging is a helpful and sometimes essential adjunct to clinical history, physical examination, and electrodiagnostic studies. Advances in imaging technology have allowed the visualization of nerve structures and their surrounding tissues. The clinical applications of ultrasound and magnetic resonance imaging (MRI) in the evaluation of peripheral nerve disorders are growing exponentially. This article reviews basics of ultrasound and MRI as they relate to nerve imaging, reviews advantages and limitations of each imaging modality, reviews the applications of ultrasound and MRI in disorders of peripheral nerve, and discusses emerging advances in the field.

Contents

Common Compression Neuropathies 241

Svetlana Faktorovich, Asia Filatov, and Zufe Rizvi

Compression neuropathies, also known as entrapment neuropathies, are common neurologic conditions seen in medicine. These often are due to mechanical injury, either compression or stretch of the affected nerve, and initially result in focal demyelinating changes. If left untreated, secondary axonal injury and lasting disability can result. Patients typically present with pain, sensory changes, and potentially weakness in the distribution of the affected nerve; therefore, a basic knowledge of neuromuscular anatomy is necessary to identify these conditions. Initial treatment of mild to moderate cases often is conservative. In severe cases or those refractory to conservative therapy, surgery should be considered.

Diabetes and Peripheral Nerve Disease 253

Lindsay A. Zilliox

It is increasingly recognized that diabetic neuropathy is associated with early diabetes, prediabetes, and the metabolic syndrome. Early detection and diagnosis are important to slow progression and prevent complications. Although strict glucose control is an effective treatment in type 1 diabetes, it is less effective in type 2 diabetes. There is a growing body of literature that lifestyle interventions may be able to prevent or slow progression of neuropathy in type 2 diabetes. In addition to the typical distal symmetric polyneuropathy, there are many types of "atypical" diabetic neuropathies that are important to recognize.

When Is It Not Diabetic Neuropathy? Atypical Peripheral Neuropathies, Neurologic Mimics, and Laboratory Work-up 269

Peter H. Jin

Peripheral neuropathies have many nonspecific features that are shared by various neurologic disorders. These disorders include atypical peripheral neuropathies along with neurologic disorders outside of the peripheral nervous system. An understanding of clinical fundamentals and a measured approach to laboratory work-up can assist the provider in achieving diagnostic confidence.

Small Fiber Neuropathy in the Elderly 279

Lan Zhou

Small fiber neuropathy is common and prevalent in the elderly. The disease can be associated with many medical conditions. It often has a negative impact on quality of life due to painful paresthesia, dizziness, and sedative side effects of pain medications. Skin biopsy is the gold standard diagnostic test. Screening for associated conditions is important, because etiology-specific treatment can slow down disease progression and ameliorate symptoms. Adequate pain control can be challenging due to safety and tolerability of pain medications in the elderly. Treatment should be individualized with the goals of controlling underlying causes, alleviating pain, and optimizing daily function.

Cancer and Peripheral Nerve Disease **289**

Jonathan Sarezky, George Sachs, Heinrich Elinzano, and Kara Stavros

Patients with cancer may experience neuropathy at any stage of malignancy, ranging from symptoms that are the earliest signs of cancer to side effects of treatment. Peripheral nerves are affected most commonly in a symmetric, stocking-glove pattern. Sensory neuronopathies, plexopathies, and radiculopathies may also be seen. The most common type of neuropathy in patients with cancer is related to chemotherapy, and recently peripheral nerve complications have been described as an effect of immune checkpoint inhibitors too. Other causes include paraneoplastic syndromes, direct tumor infiltration, and radiation. Treatment focuses on addressing the underlying cancer and management of neuropathic pain.

Paraproteinemias and Peripheral Nerve Disease **301**

Yaowaree Leavell and Susan C. Shin

This article provides an overview of the clinical features, diagnosis, and treatment of the major paraprotein-related peripheral neuropathies, including monoclonal gammopathy of undetermined significance, Waldenström macroglobulinemia, POEMS syndrome, multiple myeloma, transthyretin amyloidosis, and light chain amyloidosis. For each paraprotein neuropathy, the epidemiology, demographics, systemic findings, and electrophysiologic features are presented. Pharmacologic treatment of transthyretin amyloid polyneuropathy also is reviewed.

Guillain-Barré Syndrome and Other Acute Polyneuropathies **313**

Justin Kwan and Suur Biliciler

Guillain-Barré syndrome (GBS) is an acute autoimmune neuropathy that can cause motor, sensory, and autonomic symptoms. Although GBS primarily is a neuropathic disorder, multiple organ systems can be affected during the disease course, and older patients may be more vulnerable to systemic complications. Close clinical monitoring and early interventions using pharmacologic and nonpharmacological treatments may lead to an improved long-term outcome.

Chronic Immune-Mediated Polyneuropathies **327**

Stephen Zachary Cox and Kelly G. Gwathmey

This article discusses the chronic immune-mediated polyneuropathies, a broad category of acquired polyneuropathies that encompasses chronic inflammatory demyelinating polyradiculoneuropathy (CIDP), the most common immune-mediated neuropathy, the CIDP variants, and the vasculitic neuropathies. Polyneuropathies associated with rheumatological diseases and systemic inflammatory diseases, such as sarcoidosis, will also be briefly covered. These patients' history, examination, serum studies, and electrodiagnostic studies, as well as histopathological findings in the case of vasculitis, confirm the diagnosis and differentiate them from the more common length-dependent polyneuropathies. Prompt identification and initiation of treatment is imperative for these chronic immune-mediated polyneuropathies to prevent disability and even death.

Contents

Immunotherapy for Peripheral Nerve Disorders

347

Andre Granger and Elina Zakin

Inflammatory peripheral neuropathies can be disabling for any patient. Selecting the most appropriate agent for treatment, especially in the elderly, is no simple task. Several factors should be considered. Herein, we discuss immunotherapeutic options for peripheral nerve diseases and the important considerations required for choosing one in the geriatric population.

Management of Neuropathic Pain in the Geriatric Population

361

Elizabeth J. Pedowitz, Rory M.C. Abrams, and David M. Simpson

Neuropathic pain is common in the geriatric population. Diagnosis requires a thorough history and physical examination to differentiate it from other types of pain. Once diagnosed, further workup is required to elucidate the cause, including potential reversible causes of neuropathy. When treating neuropathic pain in the elderly, it is important to consider patients' comorbidities and other medications to avoid drug-drug interactions and iatrogenic effects given the physiologic changes of drug metabolism in the elderly. Nonsystemic therapies and topical medications should be considered. Systemic medications should be started at low dose and titrated up slowly with frequent monitoring for adverse effects.