

# Contents

**Foreword** ix

George H. Kraft

**Preface** xi

Kevin N. Hakimi

**The Prevention of Foot Ulceration in Diabetic Patients** 595

Ileana M. Howard

Diabetic foot ulcerations are a costly and common public health challenge. Although several organizations have emphasized the need to increase awareness of this problem and called health care providers to action to decrease the incidence of ulceration and amputation, there is limited evidence regarding what interventions are best suited to accomplish this goal. This article reviews the pathogenesis, risk factors, and current interventions that have been studied for the prevention of foot ulceration. Preventive measures with evidence for decreasing incidence of ulceration include patient education, offloading abnormal pressures with foot orthotics, and thermal monitoring.

**Update in Diagnosis and Treatment of Diabetic Foot Infections** 611

Andy O. Miller and Michael Henry

Foot infections are a major cause of morbidity and mortality in diabetics. Evaluation of diabetic foot infections often requires clinical, radiologic, laboratory, and microbiologic assessment. Osteomyelitis has a profound impact on the prognosis and management of these infections, and diagnosis can be difficult; the gold standard remains bone biopsy. Despite a panoply of studies, the optimal management of diabetic foot infections remains poorly understood. Antibiotics, surgery, rehabilitation and/or off-loading, and glycemic control remain the cornerstones of treatment; alternative therapies remain largely unproven.

**Update on Peripheral Arterial Disease and Claudication Rehabilitation** 627

Maya J. Salameh and Elizabeth V. Ratchford

The prevalence of peripheral arterial disease is high and will continue to grow with our aging population. It is often under diagnosed and under treated due to a general lack of awareness on the part of the patient and the practitioner. The evidence-base is growing for the optimal medical management of the patient with peripheral arterial disease; in parallel, endovascular revascularization options continue to improve. Exercise training for claudication rehabilitation plays a critical role. Comprehensive care of the peripheral arterial disease patient focuses on the ultimate goals of improving quality of life and reducing cardiovascular morbidity and mortality.

**Clinical Features and Electrodiagnosis of Diabetic Peripheral Neuropathy in the Dysvascular Patient**

657

Karen Wooten

Diabetic peripheral neuropathy (DPN) is a common disorder that can lead to limb loss and death. Up to 50% of DPN patients can be asymptomatic. This fact contributes to making DPN the leading cause of lower limb amputation. The degree of heterogeneity in the clinical manifestations of DPN makes diagnosing this condition difficult. This article reviews the characteristics, diagnosis, electrodiagnosis, classification, pathogenesis, and treatment of DPN.

**Pre-Operative Rehabilitation Evaluation of the Dysvascular Patient Prior to Amputation**

677

Kevin N. Hakimi

Lower-extremity amputation secondary to dysvascular disease, including diabetes and peripheral vascular disease, is a major health problem in the United States. Due to the increased comorbidities in this patient population, pre-operative rehabilitation evaluation by a multidisciplinary team is crucial to ensure optimal patient outcomes. This article discusses the key factors that may affect functional outcomes in this patient population and outlines important history and physical examination components that should be evaluated pre-operatively.

**Prosthetic Rehabilitation Issues in the Diabetic and Dysvascular Amputee**

689

Heikki Uustal

Evaluation and management of diabetic and dysvascular patients with lower limb amputation begins with a thorough history and physical examination. A pre-prosthetic and prosthetic program of physical therapy, pain management, psychological assessment, and education helps patients resume functional mobility and gain acceptance of the limb loss. Physicians and prosthetic teams work together to design and prescribe the most appropriate prosthetic device for patients to reach maximal functional level. Careful monitoring of patients and a full understanding of patients' medical conditions help avoid complications and falls during rehabilitation. Long-term follow-up is necessary to assess fit and function of prosthetic devices.

**Psychosocial Factors in Chronic Pain in the Dysvascular and Diabetic Patient**

705

Katherine A. Raichle, Travis L. Osborne, and Mark P. Jensen

Dysvascular and diabetic patients are faced with high rates of chronic pain as a consequence of numerous secondary sequelae, including diabetic neuropathy and limb loss. Researchers and scientists have put forth a tremendous amount of effort to understand the complex nature of pain in this population of individuals, as well as others with chronic pain secondary to illness and injury. The emergent understanding of anatomy and sensory physiology within the past century has fueled an initial focus of understanding pain from a purely neurologic and biochemical perspective. Over the past few decades, the field has moved toward an understanding of pain as a process involving the dynamic interaction of biologic, psychological, behavioral, and social variables. This article provides a brief

overview of several psychosocial processes, cognitive, affective, and behavioral, that have emerged as influential to the experience, impact, and treatment of pain.

### **Updates in Cardiac Rehabilitation**

719

Jennifer Dorosz

Cardiac rehabilitation is one of the most effective treatments for secondary prevention for patients with heart disease. In particular, exercise training confers a variety of clinical benefits that leads to an increase in functional ability and a decrease in mortality in patients with a variety of cardiac diagnoses. Although they require a long-term commitment, standard training programs are safe and cost-effective. Despite its proven benefit, however, cardiac rehabilitation is underused in the United States.

### **Cardiovascular Disease in Persons with Spinal Cord Dysfunction—An Update on Select Topics**

737

Jelena N. Svircev

Cardiovascular disease (CVD) is a leading cause of death in people with spinal cord injury (SCI), yet little is known about the prevalence of the disorder and how risk factors for CVD, such as dyslipidemia, diabetes, and obesity, differ compared with the able-bodied population. Additionally, limb loss, an underappreciated topic in the setting of SCI, is a frequent complication of SCI, and may be related to CVD, either directly, as undiagnosed peripheral vascular disease, or indirectly, as a consequence of diabetes or obesity. This article briefly reviews the topics of dyslipidemia, diabetes, and obesity in SCI and discusses the management of limb loss for individuals with SCI.

### **Index**

749