

# Preface

Although the title of this book is *Musculoskeletal Disease Associated with Diabetes Mellitus*, it describes not only bone and muscle disease but also its association with various metabolic abnormalities in diabetes. In the past decade, we have made substantial progress in accumulating evidence on the important role of bone and muscle as an endocrine organ in the development of abnormal glucose metabolism and in the progression of atherosclerotic changes in diabetes mellitus. Although diabetic osteopathy is characterized by various forms of bone abnormalities, increased fracture rate due to osteoporosis is the most important of those because it has been shown to increase mortality. It had been believed that diabetic patients, particularly those with type 2 diabetes, maintained bone mineral density normal for their age; however, recent epidemiological data indicate a higher bone fracture rate related to bone mineral density in diabetic patients, both type 1 and type 2, to which impaired bone quality and preferential occurrence of cortical porosis might contribute. Furthermore, the importance of sarcopenia is increasingly recognized from the standpoint of impaired longevity or mortality in diabetic patients, because muscle has now been established not only as a target organ of insulin to regulate various aspects of metabolism including glucose towards a normal level but also as an endocrine organ that regulates systemic metabolism in a diabetic state, in addition to the maintenance of activities of daily living.

To continue to improve our understanding of this newly developing area, this book therefore summarizes the current state of the art in this field. Each contributing author was asked to review the available data on each topic and the strategies to protect abnormalities of bone and muscle metabolism of a diabetic state in a comprehensive way. Owing to this design of the book, there might be some overlap of descriptions as well as some redundancy from one chapter to another.

We are most appreciative of the efforts of my colleague Dr. Masanori Emoto for his magnificent effort to improve the quality of the section on muscle, and we thank Ms. Yoko Arai and Ms. Chihiro Haraguchi at Springer Japan for their editorial

assistance. This book is clearly the result of an enormous effort by authors who responded positively to the call by an editor to produce their chapters in spite of their other, urgent work. I am truly grateful for their commitment.

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