Metabolic Syndrome: An Interdisciplinary Approach

Norbert Runkel^a Matthias Blüher^b Jens Aberle^c

^aDepartment of General Surgery, Schwarzwald-Baar Hospital, Villingen-Schwenningen, Germany;

^bDepartment of Medicine, University of Leipzig, Leipzig, Germany;

^cDepartment for Endocrinology and Diabetology, University Hospital Hamburg-Eppendorf, Hamburg, Germany

The literature search for ‘metabolic syndrome and obesity’ reveals its first citation in PubMed in the year 1970 [1]. The first review in the German language was presented by Hanefeld and Leonhardt 11 years later and described the common prevalence of obesity, hyper- and dyslipoproteinemia, maturity-onset diabetes, gout, and hypertension associated with an increased incidence of atherosclerotic vascular disease, fatty liver disease, and gallstones [2]. The rapid increase in the number of publications on the above topic from 56 in the year 2000 to more than 500 by the year 2013 represents the increased awareness and interest of researchers and clinicians alike. What used to be an adult-onset disease is now discovered in children and adolescents with alarming frequency. Hence, obesity and the metabolic syndrome have become one of the greatest public health challenges worldwide within the last decade.

The concept of the metabolic syndrome represents a comprehensive view of a multidimensional network of risk factors and cardiovascular, metabolic, and hepatic diseases. The metabolic syndrome describes a risk factor clustering for cardiovascular disease and type 2 diabetes mellitus, which includes central obesity, elevated glucose and triglyceride plasma concentrations, low high-density lipoprotein cholesterol levels, high blood pressure, and a proinflammatory, prothrombotic state. There is now compelling evidence that each component is not restricted to one singular organ but affects multiple organs in a multisystem disease fashion. Although insulin resistance and visceral obesity are central pathophysiological factors, the underlying common mechanism remains to be elusive. The research in order to identify the underlying mechanisms requires a much broader scientific effort in molecular biology, pathophysiology, epidemiology, and clinical research. Similarly, the current management of the metabolic syndrome combines an individualized therapy of manifest individual disorders

with weight reduction strategies to lower the cardiovascular risk. There is an increasing need for a more comprehensive approach and an intensified collaboration of primary care physicians and specialists of diabetology, cardiology, obesity, gastroenterology, and bariatric surgery.

Because unhealthy body weight represents an important factor in the development of the metabolic syndrome, weight control as well as therapies aiming for a healthier body weight are the basic prevention and treatment tools in the management of patients with the metabolic syndrome. In the past, lifestyle interventions as well as pharmacological and endoscopic therapies have only provided limited and short-term success whereas visceral surgery currently remains the most effective therapy. Originally conceived in an attempt to merely reduce excessive weight and to improve cosmetic appearance, bariatric surgery has undergone an evolutionary development throughout the years, allowing it to be now recognized as a valued surgical treatment of obesity in conjunction with its correlated metabolic complications. Today, reversing metabolic complications of obesity has a higher priority than weight loss per se. The modern term ‘metabolic surgery’ is employed to indicate the use of gastrointestinal surgery to primarily and purposely treat metabolic disorders rather than to simply act on body weight reduction.

The decision of choosing this particular focus topic is an invitation to physicians and surgeons in the field of visceral medicine to take up the challenges of treating patients with metabolic syndrome. Accordingly, we have invited acknowledged scientific teams from Germany, Austria, and Switzerland to elucidate the current understanding of the metabolic syndrome and to foresee future trends in their field. As a result, the current issue of VISCERAL MEDICINE is a multifaceted overview to foster interdisciplinary activities both at the laboratory bench and the bedside.

References

- 1 Gordon ES: Metabolic aspects of obesity. *Adv Metab Disord* 1970;4:229–296.
- 2 Hanefeld M, Leonhardt W: Das metabolische Syndrom. *Dt Gesundheitswesen* 1981;36:545–551.