



Advances in Clinical Chemistry, Vol. 79. Gregory S. Makowski (ed.). Academic Press, An Imprint of Elsevier, 50 Hampshire Street, 5th Floor, Cambridge MA 02139, USA. 2017. xi + 252 pages. Price: US\$ 205.

The book under review is a useful addition to the literature of clinical chemistry containing valuable information to the concerned clinicians for appropriate diagnosis and effective treatment.

The book is divided into six chapters. The first chapter describes the role of CTRP1, a family of adipokines in non-alcoholic fatty liver disease (NAFLD). The disease is associated with metabolic disorders like obesity, diabetes and cardiovascular disorders. Adipokines, produced by adipose tissue, may modulate pathways like glucose and fatty acid metabolism. The authors have given insight into various liver diseases including NAFLD which is a common disease in most of the people worldwide. The authors have mentioned how a person can develop hepatocellular carcinoma and liver cirrhosis and how NAFLD is linked to obesity, inflammation and insulin resistance. The structure, function and regulation of CTRP1 is well explained along with the role of CTRP1 in glucose homeostasis, fatty acid metabolism, thrombus formation, anticoagulation effects, inflammation and aldosterone production. The circulating levels of CTRP1 were correlated with liver function markers. It also describes the clinical significance of CTRP1 in metabolic disorders.

The second chapter discusses the function of extracellular vesicles (EVs) in

biological systems, the isolation, characterization methods of EVs and recent advances in protein markers and peptide probes that sense EVs through lipid and curvature sensing proteins and peptides. The authors mention that EVs have significant role in cancer progression, metabolism and the immune system. The lipid- and curvature-targeting peptides are new concepts in the field of chemical biology and biotechnology developments. They offer a novel approach to studying some basic biological phenomenon such as how EVs are generated and how they transport cell signalling molecules to the recipient cells. This chapter explains in detail the development of protein markers of EVs, lipid and curvature sensing proteins and peptides and their application in the diagnosis of cancer progression.

The third chapter gives an overview of droplet-based digital polymerase chain reaction (dPCR) in cancer diagnosis. Efficient characterization of genetic alterations in oncology, virology or prenatal diagnosis requires highly sensitive and specific high throughput approaches. Digital PCR (dPCR) and droplet-based dPCR have become essential tools for the management of patients with cancer, particularly appropriate for the emerging field of liquid biopsy analysis. This new strategy represents an ideal tool for cancer research, both for understanding fundamental questions in cancer research or for cancer patient's clinical follow-up and treatment management. This technique detects cancer in early stages and helps to treat patients with regimens that fit their genetic background as well as the genome of their tumour. This chapter clearly describes the development in dPCR technology and different strategies particularly applications and latest development of microfluidic droplet based dPCR for cancer detection in body fluids.

The fourth chapter is about novel biomarkers of heart failure. Heart failure (HF) remains a major health problem, although substantial improvements have been made in addressing a majority of cardiac disorders. Hence a number of potential biomarkers are emerging for the diagnosis and treatment of HF patients. This chapter gives an insight into seven groups of potential biomarkers in heart failure associated to myocardial stretch,

myocyte injury, renal dysfunction, oxidation stress, etc. and their application in HF diagnosis, monitoring and prognosis.

In chapter 5, advances in clinical mass spectrometry are discussed. This chapter gives an overview of GC-MS, LC-Tandem mass spectrometry and clinical applications of mass spectrometry in therapeutic drug monitoring, toxicology and steroid hormone analysis. It also describes different methods for sample preparation. It gives information about how drugs are monitored in patients through mass spectrometry. The advantage of LC-MS is that the method can be applied using small sample volume; with the advent of MS instruments with increased sensitivity, the sample volume could be reduced further. Hence it has become a common practice to analyse steroid and thyroid hormones which are found at extremely low concentrations in patient's serum. This chapter also gives an insight into recent advances in microbiology and clinical mass spectrometry for the analysis of proteins and peptides.

Chapter 6 describes categories of chronic diarrhoea and different diagnostic methods of diarrhoea. Investigations to achieve a diagnosis for chronic diarrhoea range from screening blood and stools to more directed testing such as diagnostic imaging, endoscopic and histological evaluation. The author has explained all types of chronic diarrhoea such as inflammatory diarrhoea, osmotic diarrhoea, secretory diarrhoea, etc. and their diagnosis. The pathophysiology-based framework proposed in this chapter will allow the clinician to select the screening test followed by targeted tests to minimize cost and complications to the patient, thereby proving a highly effective method to achieve an accurate diagnosis.

This book is a good read for people interested in finding latest trends in clinical chemistry.

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