
Preface

The role of neuroinflammation, as a common denominator of diverse neurological disorders including ageing, infections, trauma, stroke, demyelinating and degenerative diseases, was overlooked till recently since it lacked the classical markers of inflammation elsewhere in the body. It was only after the tools and techniques of molecular biology were utilized to investigate the pathophysiology of these conditions that the tell-tale evidence of inflammation in all these pathologies came to light. Not only inflammation was found to accompany these lesions but also it soon became evident that neuroinflammation plays a critical role in the pathogenesis of these conditions.

Over the years voluminous literature has accumulated on the subject but the knowledge is dispersed and not available as a comprehensive overview. It was realized that a number of neuroscientists in different parts of the country were studying various aspects of neuroinflammation in specific disease entities. This prompted us to bring together at one place the current knowledge on the subject (the proverbial nine blind men and the elephant!).

This monograph has 13 chapters contributed by investigators from institutions in different parts of the country. The first chapter is an overview providing a definition of neuroinflammation, its biomarkers and its cellular and molecular components. An attempt is made to answer a series of questions regarding its significance in different pathologies and a brief mention is made on the role played by ageing, obesity, metabolic disorders and systemic infection/inflammation. It outlines its clinical implications. Patro and his colleagues (Chap. 2) elaborate the role of microglia as the dominant player in initiating and promoting the inflammatory cascade, while in the Chap. 3 Tiwari and Seth discuss the role of astrocytes in the process. They specially highlight their role in pathogenesis of HIV-associated neurodegenerative disorders. Dutta, Ghosh and Basu, in Chap. 4, elaborate the dangerous liaison between infections and inflammation. They provide an account of the immune responses (which form the basis of inflammation), to different types of infections affecting the central nervous system. Chapter 5 by Singh and Das Sharma deals with role of neuroinflammation in demyelinating disease. Tripathi and Jana, in Chap. 6, present an overview of neuroinflammation related to neurodegenerative disorders, taking Huntington's disease as an example. This is followed by a chapter on neuroinflammation during Parkinson's disease by Sinha et al.,

amyotrophic lateral sclerosis (ALS) by Upadhyay et al., and by Alam et al., neuroinflammation in ischemic stroke. Irshad, Madan and Chosdol (Chap. 10) have dealt with role of inflammation in augmenting tumour progression, angiogenesis, promoting tumour cell proliferation and survival. Nivedita Chatterjee (Chap. 11) discusses the dysfunction of glia as a cause of many retinal disorders. Kaur et al. deals with, till recently unexpected, systemic disorder, obesity and its complementary role in augmenting neuroinflammation triggered by any aetiology. The possible therapeutic implications of the new knowledge have been referred to by all authors. The last chapter by Ghosh and Ghosh discusses the role of microglia in adult neurogenesis.

The editors take this opportunity to thank all authors and their collaborators to accede to their request to contribute to this book, which will hopefully be of great utility to students and researchers interested in neurosciences.

Special thanks are due to our publisher “Springer” and persons associated with production specially Madhurima Kahali and Muthu Rajan for their help and support in bringing out this attractive publication.

Gurgaon, India

Nihar Jana
Anirban Basu
Prakash Narain Tandon

Inflammation: the Common Link in Brain Pathologies

Jana, N.; Basu, A.; Tandon, P.N. (Eds.)

2016, X, 345 p. 38 illus., 31 illus. in color., Hardcover

ISBN: 978-981-10-1710-0