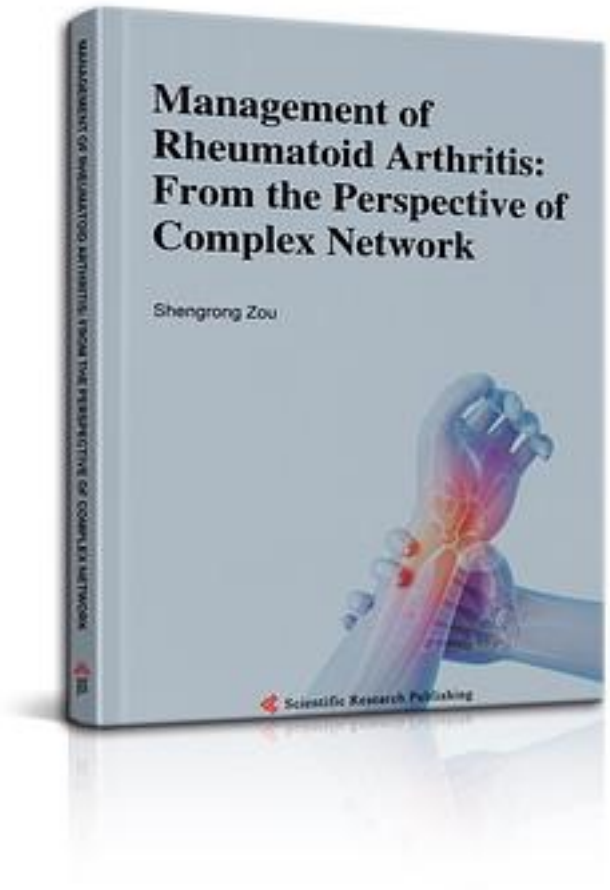
Management of Rheumatoid Arthritis: From the Perspective of Complex Network



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100 years ago, we don’ t understand electricity, so we think of the electric eel as an amazing fish. With understanding the electricity, we learn that the power of the eel is produced by muscle discharge. Similarly, if we don’ t understand sound, we would not know the magic of bat flying; if we don’ t understand magnetic field, we would not know the migration of whale and many other animal.

Before the system theory came into being, our understanding of biology is still based on the basis of decomposition and reduction. If we’ re stuck in reductionism, many complex autoimmune diseases, such as Rheumatoid arthritis (RA), will be difficult to understand.

With the emergence of complex networks in 1989, understanding of biological networks has been enhanced. In this book we present the management strategy of RA from the perspective of complex network.

RA is the most common chronic autoimmune joint disease. This book argues that the etiology of RA is mainly caused by chronic stress and stress factors include physical and psychological stress. Existing statistical techniques based on reductionism cannot discover many relevant disease risk factors and complex interaction relationship. The disease network model based on complex network is important for the analysis and treatment of RA disease.

In this book, we have found five important layers of RA complex network and presented five balances regulating strategy in the management of RA. We have followed up one RA patient (wife of the author) for two year using this strategy, and the management effect is good. This Book argues RA is self- limiting to some extent, and good management with five balances regulating strategy would have positive significance, among which the balance between neuroendocrine system and immune system is the most important. During the day, glucocorticoid plays an important role in controlling inflammation, and human growth hormone plays an important role in eliminating inflammation during the slow-wave sleep at night. Five balances core concepts can shed light on the management of other causes of arthritis.

At next step we hope more researchers to participate in “Network Medicine” study to accumulate more cases, constantly improve the RA network model and analyze parameters characteristic and interaction relationship of RA network model. Only common characteristics network model based on the more RA patients improved in the future, could RA be individualized treated.

The research of complex network is still improving, and the research on RA management network will certainly enhance.

“The road ahead will be long and our climb will be steep”.

I extend my deep appreciation to my wife (one RA patient), for her continuous encouragement and support to write this book.

Dr. Shengrong Zou, one Osteoarthritis patient

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评论

The exact cause of RA is not clear. The epidemiological of RA shows that RA disease is associated with degradation of thymus. RA usually occurs after about 15 years of thymus degradation. Both genetic and environmental factors have been identified to play a role in disease initiation and progression.

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书评

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