
Preface

Approximately 120 years ago, Elia Metchnikoff suggested that the main destiny of immunity is not a battle against nonself, but rather a harmonization inside self. Although a prototype of the immune system seems to be for elimination of aliens such as viruses, bacteria, protozoa, parasites, and fungi, the system has originally evolved for clearance and utilization of emerging debris from lastingly dying cells of its own. Therefore, the immune functions are chiefly directed “inward” rather than “outward” and are based on the intrinsic recognizing components of the “self.” That is why the immune system sometimes attacks its own organs and tissues, including the testis, under some abnormal conditions in mammals.

For living organisms, “growth and reproduction are basic,” and the “self-defense system involving immunity” supports both. In medical schools, various practices in anatomy, physiology, biochemistry, pathology, and other important areas have been provided. Among these, practices in parasitology were most special and unique for the author. For medical students who are familiar with mammals, observing flatworms under a stereoscopic microscope may be an extraordinary experience. In the bodies of hermaphroditic animals, digestive and reproductive organs are closely compacted exactly as “growth and reproduction are basic for living organisms.” However, in these parasites, the spermatozoa and ova are never rejected and damaged by the self-immune system. Therefore, autoimmune phenomena against gonads and gametes are considered a byproduct of biological evolution of far complexed immune system in mammals. Various relationships between the reproductive and immune systems in mammals have been explored in the field of “reproductive immunology.”

In recent years, most publications in reproductive immunology have focused on the role of the uterus, fetus, placenta, and their combination; fewer papers have examined gonadal and gamete immunology. However, the gonads are core organs for the reproductive system. In this book, the author presented an idea that “the testis is an immunologically privileged but also immunologically fragile organ.” Considering that idiopathic gonadal failure often involves the autoimmune responses, studies on the developmental association between the gonads and lymphoid organs must be more focused on. In particular, the testis is specific in that it produces spermatozoa of which differentiation antigens newly appear long after the establishment of immune tolerance and therefore contains strong and much

autoimmunogenic antigens. In other words, spermatogenesis begins at puberty, at a time far after which the immune system recognized the body's own antigens as "self."

This book reviews various investigations on testicular autoimmunity and its biological background based on clinical and experimental approaches. In spite of the presence of highly autoimmunogenic antigens inside the testis, why do most men not develop testicular autoimmunity? Its aim is to attempt to understand the regulatory mechanisms that normally prevent testicular autoimmunity and the events that overcome the regulatory mechanisms. The author hopes that this book would be helpful for further investigation on inflammation of autoimmune or non-autoimmune origin in the testis.

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Testicular Autoimmunity
A Cause of Male Infertility

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