BOOK REVIEW

C.V. Holland, M.W. Kennedy (Eds.): The Geohelminths: *Ascaris*, *Trichuris* and Hookworm. World Class Parasites, Vol. 2. *Kluwer Academic Publishers*, *Boston*, *Dordrecht*, *London*, *2001. ISBN 0–7923–7557–2*, *hardbound*, *352 pp. Price EUR 165.00*, *USD 150.00*, *GBP 105.00.*

The book is aimed at researchers and students interested in current research that has a major impact on human health. It should supplement more formal texts that cover taxonomy, life cycles of parasites, morphology, vector distribution, symptoms and treatment. In our opinion, the selection of contributions and their arrangement is rather chaotic and the title does not fully correspond to the contents: it covers not only true geohelminths (i.e. parasitic helminths without intermediate hosts), but also some biohelminths (like *Trichinella*, microfilariae and *Schistosoma*) and free-living helminths (*Caenorhabditis*).

SECTION 1: **Epidemiological patterns and consequences**

The first section consists of two chapters called "Distributions and Predisposition: People and Pigs" and "Control Strategies". The overdispersed distribution of helminths is elucidated as a result of combination of "exposure factors" and "susceptibility factors". Multiple factors of overdispersed distribution have been studied on rodent model (especially *Trichuris muris* – mouse) and pig model (*Ascaris suum* and *Trichuris suis*). The control strategies are based on experience from WHO experts in various developing countries. The main points are periodic treatment, prevention of re-infection and community diagnosis and community treatment instead of individual ones.

SECTION 2: The cost and damage done

Chapter 3 is a comprehensive review covering pathophysiology of intestinal nematodes, while Chapter 4 is based mainly on speculations about influence of intestinal nematodes to cognitive development as conclusive well-controlled studies have not been performed.

The last chapter of this section presents some of the evidence on the economic burden of intestinal nematode infections and discusses the feasibility of approach to their control.

SECTION 3: Immunology – mice, pigs and people

The review of immune responses to *Ascaris* infection in humans (Chapter 6) is focused particularly on the role of larval stages stimulating specific immune response. The next chapter summarises the knowledge about immune response to *A. suum* in pigs while Chapters 8 and 9 are devoted to the immune response to *Trichuris* infection and hookworm infections. These reviews are among the best parts of the whole book.

SECTION 4: Genetics – mice, worms and people

Recent progress in genetic and molecular studies gives some promise for our better understanding of the nematode infection, for curing diseases and preventing epidemics. In Section 4 (Chapters 10–14), five groups of researchers introduce current genetic approaches aimed to tackle the problems of intestinal nematode epidemiology and host susceptibility. The concern is complex because genetic and lifestyle variations of the parasites and hosts must be considered. These factors evolve in time as both groups try to survive one another in a constant competition.

In Chapter 10, the authors demonstrate the value of statistical analyses for understanding the host-parasite relationships. They describe a model case called JIRI helminth project and show that genetic factors clearly affect susceptibility and resistance to nematode infection. The authors mention ongoing efforts to map and identify genes or loci influencing the susceptibility, however, these efforts are far from conclusion. New methods quantifying genetic variation using markers such as microsatellite and mitochondrial DNA sequence or single nucleotide polymorphisms (SNPs) are described in Chapter 11. These analyses uncover the population genetic structure.

Surviving strategies of parasitic worms in response to selection pressure and genetic variation of nematodes are discussed in Chapters 12 and 13. Nematode adaptation is amazingly flexible and rapid. The powerful method called PCR-based SSCP (single-strand conformation polymorphism) of measuring genetic diversity is useful to study the epidemiology and ecology of parasitic nematodes of humans.

Chapter 14 concerns molecular genetic approaches necessary to understand nematode biology. Here the authors discuss the importance of comparative functional studies utilising reverse genetic techniques (e.g. gene transfer, gene silencing *in vivo* [RNA interference] and microarray analyses of gene expression) already developed for the free-living nematode *Caenorhabditis elegans*. The research of parasitic nematodes is just beginning to profit from the knowledge on *C. elegans* that is likely to have a great impact in near future.

Descriptions of the progress in genetic and molecular studies presented in this section are somewhat redundant. However, the overall message is that the genetic approach is inevitable and will be very useful to actually solve problems caused by helminthic parasites in the future.

SECTION 5: Interaction between geohelminth infections and other diseases

The most of the Chapter 15 is devoted to relations of schistosomiasis and reduced risk of atopic diseases. Although the production of anti-inflammatory cytokines is similar in infections caused by intestinal nematodes, we feel that this chapter should not have been included into this book with its specific title. The effect of helminth infections on the reduced risk of developing allergy is extremely interesting and should be studied in details.

The closing chapter is again based rather on speculations, that control of geohelminths could influence HIV and tuberculosis incidence, especially in developing countries. Some of the hypotheses are highly interesting, but they should be proved by exact procedures.

Most of the chapters contain numerous tables and graphs; there are only few photographs in the book and their reproduction is of poor quality.

Considering other books from the World Class Parasite book series, this book can be recommended not as a source of basic information about *Ascaris*, *Trichuris* and hookworm, but as a source of supplemental information about epidemiology, immunology and genetics of parasitic helminths.

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