
Preface

Arthropod parasites have always had a “conflicting” relationship with animals including humans. Due to their need to feed on blood or other host tissues, they serve as vectors of pathogenic viruses, bacteria, protozoa, and helminths, cause severe allergic reactions, or simply provide nuisance due to their bites.

Some of the most important diseases affecting human history, such as malaria, nagana, yellow fever, and plague, are arthropod borne and remain public health problems today. Others such as Chikungunya and Zika viruses recently have emerged as problems of global proportions. The growing knowledge of pathogenic mechanisms, diagnosis, treatment, and prophylaxis has not been well divulged, and therefore many public health providers remain scarcely informed and believe these diseases do not occur in their day-to-day practice. As a consequence, many preventable deaths have occurred in both endemic and non-endemic countries and regions. As an example, in Brazil, the probability of death by malaria in an infected patient is 1000 times greater in non-endemic areas than in the endemic Amazonian region. Recent reports of deaths by malaria caused by *Plasmodium falciparum* in Rio de Janeiro and of delay in the correct diagnosis of malaria caused by *P. vivax* in Florianopolis emphasize the need for adequate health provider awareness. The more exotic findings of a fatal congenital case of Chagas disease, recently diagnosed in Spain, and 244 cases of African trypanosomiasis in Europe and the USA from 1902 to 2012 (see Chap. 18) emphasize the need of a good anamnesis, always including the travel history of the patient, and of a comprehensive knowledge of arthropod-borne diseases. It should be remembered that “the death of one man is a tragedy; the death of millions is a statistic.”¹

Infectious patients, agents, and vectors are mobile and may be undiagnosed in new areas; therefore it is dangerous to affirm that “this does not occur here.” For example, several dogs and sand flies have recently been found infected by *Leishmania infantum* in the Santa Catarina Island in Santa Catarina, one of the few Brazilian states where no visceral leishmaniasis previously had been reported. The apparent nonoccurrence of diseases may sometimes reflect “the happiness that results from ignorance.”

Because human beings and other animals frequently share arthropod parasites and the pathogens they transmit, it would not be sensible to analyze separately parasites of medical and veterinary importance. The finding of

¹ Attributed to Josef Stalin

West Nile virus in alligators in Florida and of rickettsiae in ticks from snakes in Thailand emphasizes the complexity of studies on arthropod-borne disease. The old Jacob's (1957) expression "sea of *Toxoplasma* around us" should also be applied to these diseases.

Arthropod-borne diseases have been associated by lay persons and even by health professionals with tropical climates and forests, but they are widely distributed in the world; at least 17 arboviruses have been found in Canada, and malaria was previously a health problem in the UK and Finland.

Predominance of occurrence of several arthropod-borne diseases in poor people living in underdeveloped countries has made them neglected diseases, but for humanitarian and practical reasons, they should not be considered "someone else's problem." In 2012, 2200 cases of dengue were reported in Madeira Island, and some autochthonous cases occurred in France and Croatia. Dengue and Chikungunya fever (also transmitted by *Aedes aegypti*) have occurred in other countries of continental Europe, and international travels of humans and pets have introduced several pathogens into unexpected places, as shown, for example, by the recent finding of autochthonous visceral leishmaniasis in dogs in Finland.

Environmental changes as a consequence of human activities (e.g., deforestation and pollution) may influence the transmission and the distribution of diseases. Previous exposure to pathogens and nutritional status can influence the risks for disease. Knowledge of the clinical presentation resulting from arthropod-borne pathogen infections and of the associated conditions is essential for adequate diagnosis, treatment, and prevention. This knowledge must include information on the epidemiology of these diseases, current and potential distribution, and observation of conditions of life and previous travels.

The objective of the present book is to furnish to health workers and the general public information useful to solve problems related to most arthropod-borne diseases in the world. The case of Lyme disease, in which two worried mothers of children from the American city of Old Lyme, Connecticut, which were affected by a mysterious disease, found similar cases in the public health records² and informed the health authorities of the occurrence of 12 cases in the small community, unleashed the discovery of the causative agent, the natural hosts, and the tick vectors and illustrates the value of a well-informed general public.

I expect this book will contribute to saving lives and to improving health in many regions, most of them already affected by other serious problems, such as famine and wars, and frequently related diseases. Most diseases transmitted or caused by arthropods are included in this book; however, dracunculiasis, a helminthiasis caused by *Dracunculus medinensis* and transmitted by ingestion of crustaceans, is briefly referred in Chaps. 3 and 24 but not described in detail because of its trend toward eradication. Venomous arthropods (spiders, scorpions, bees, etc.) were not included, due to the availability of other recently published books. This book is focused on

²Dr. M. P. Deane (pers commun 1986), watching a lecture on Lyme disease, praised the availability of good libraries and statistics in small US cities.

diseases and must be accompanied and supplemented by other works on medical and veterinary entomology, if identification of vectors and more details of their biology are needed.

Even being a book directed to solve health problems, an effort was made to “guard against stripping our science of its share of poetry,” as suggested by Marc Bloch for history, trying to enhance interest and stimulate research.³

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³See: <http://buscatextual.cnpq.br/buscatextual/visualizacv.do?id=K4783901J2>.

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