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Chagas Disease

A Clinical Approach

 Springer

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*To my wife Ada, my children Marina and
Pedro, and my parents Chuchi and Enrique.*

—Jaime Marcelo Altcheh

*To my family, Anabela, Tomas, Ignacio,
Facundo, Katy, Mikel, and Lore, and my pets
Uvita and Violeta.*

—Héctor Freilij

Preface I

Chagas disease was discovered over a hundred years ago, affecting several million people, mainly in Latin America, and for decades, it was ignored and neglected. It is primarily transmitted by insect vectors which carry the parasite *Trypanosoma cruzi*, the agent of the disease. Currently, in areas under vector control and in non-endemic countries, the main route of infection is the congenital route. Subsequent cardiac and gastrointestinal complications are common in untreated infected individuals. There are two available drugs (nifurtimox and benznidazole), but only few people are receiving adequate treatment due to the lack of information about the disease and its epidemiology.

Chagas disease is a potentially life-threatening illness that was historically mainly endemic to Latin America. Over the last decade, however, the disease has spread to, and is increasingly prevalent in, other continents such as North America and Europe, with an estimated seven million people infected worldwide. This migration to non-endemic countries has brought Chagas disease to areas where it had never been before, putting patients at risk of not being diagnosed if asymptomatic or misdiagnosed in symptomatic cases.

The Parasitology Service, at the Ricardo Gutierrez Children's Hospital, Buenos Aires, Argentina, is a reference center for the diagnosis and treatment of infants and children with Chagas disease. During many years, I have been working with Dr. Hector Freilij sharing the experience of improving the medical assistance of infants and children. He transferred to me the passion of the pediatric profession, and I will be grateful to him all my life. Many researchers and healthcare professionals from Latin America and other continents have worked with us, and several collaborative studies were developed during the last 30 years. The main idea for writing this book was to share and disseminate the information about the disease in order to improve the diagnosis and treatment of the affected population.

Many chapters were written by authors from Latin America, where the disease has been studied in depth, including experts working with patients on a day-to-day basis. The authors chosen come from different fields, and therefore the scope of their experience ranges from the asymptomatic disease in children to seriously ill adults, covering all aspects of the disease.

In addition to clinical information, the book includes chapters on epidemiology in the Americas and Europe and basic information about the parasite and immune response to the infection. There are chapters covering new information about diagnosis and new developments in biomarkers of treatment response.

This book gives a complete overview of Chagas disease, including its vectorial, congenital, and oral transmission, as well as practical advice about dealing with infants, children, and adults suffering from the infection.

I would like to thank all the staff at Parasitology Service for the support to my work and also to patients and their families who understand that our work was carried out to improve the diagnosis and treatment of Chagas disease.

Buenos Aires, Argentina

Jaime Marcelo Altcheh

Preface II

If we think that parasitic diseases are owned by the poorest people in poor countries, Chagas disease is a sad and valid example.

It is a complex disease due to the multiplicity of determinants that cause it, but not to doubt that all of them have poverty as a backdrop, but not only the economic one. The saddest thing is the poor interest of some health policy-makers and part of the different members of the health system to deal with this pathology.

The vectorial aspects are complex to solve, such as the characteristics of the rural domiciles, the climatic conditions, the ecosystem, the resistance of the vectors to the insecticides, but it is not impossible. In fact, there are several countries that have achieved the cutting of vector home transmission of *Trypanosoma cruzi*.

Some aspects of care, especially regarding the parasiticide treatment of patients, are controversial, as well as so many other diseases. However, there are many concepts in which there is consensus with strong evidence of benefit to patients. Despite this, the actions with clear and proven benefits for neonates, children, and adults are not carried out in the magnitude of the needs.

These are the shadows of this disease; but there are also lights and hopes. In the last decades, important advances have been achieved for the population, for example, the cutting of the transfusion transmission of this protozoan in almost all countries. In addition, several countries and some regions of other countries have certified home vector interruption. In general terms, we can affirm that the area of domiciliary vectors has decreased in the Americas, which has led to a reduction in the total number of infected persons.

In a number of healthcare centers, adequate patient care is carried out. Some health authorities and several NGOs carried out important proactive studies; this allowed that thousands of patients have already received the parasiticide treatment to avoid the serious consequences that this protozoan produces.

Our book speaks a bit of all this and other topics and is aimed at members of various branches of the health system which will update their knowledge and generate behavior in front of patients. Hopefully it will also be useful to those responsible for public health to develop health plans that aim to avoid the generation of new patients and fully assist those who already have it. There are several chapters that tell us

about the scientific contributions related to its pathogenesis, the epidemiological aspects of countries located outside the endemic area of the Americas, and the recent approaches of new and old drugs with a more pharmacological vision.

Although each of the authors, excellent referents in their respective specialties, wrote the latest information on each topic, we also know that when this book comes out, some of the concepts that have been spilled will be less valid; this is a product of the permanent concern and interest of many researchers from different branches of science to increase knowledge. Fortunately, the human being is very curious and eager for new knowledge. My thanks go to each and every one of the collaborators.

I would like to thank Dr. Jaime Altcheh for the invitation to share the creation of this book but above all, for one of its virtues, the great vocation for research that allowed our beloved Hospital Service to grow. Also I would like to thank the rest of the members of the Service and the many professionals from various countries with whom we share tasks that allowed us to know many facets of this disease and have acquired great friendships and also to the *patients*, who were the ones who allowed us to really unravel this disease, and they generated the enormous gratification when they reached their cure.

Very different would be the reality if everything that is already known about this disease will be carried out!

We must go on and on; it is not easy, but it is possible.

Buenos Aires, Argentina

Héctor Freilij

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