

## FOREWORD

By Tom Grier

In 1990, at age 38, I was diagnosed with an elusive and poorly understood disease. A disease that is far more prevalent in my neighborhood than I had ever realized: It was *multiple sclerosis* (MS). By the spring of 1991 I was on a waiting list for assisted living.

I am a trained microbiologist, and the disease that I actually had was not MS but *Lyme disease* (LD); a disease caused by a spiral shaped bacterium that under the microscope looks like syphilis.

I was a scientist and completely blindsided by a disease that I had always minimized in my mind as a non-serious disease that was easily diagnosed, and easily cured. I soon learned that almost everything I had been told about LD was untrue and based often on incorrect assumptions.

After a long string of mystery illnesses and misdiagnosed illnesses and syndromes including, Wolf-Parkinson-White syndrome, Meniere's syndrome, chronic fatigue syndrome, fibromyalgia, shingles, and fibrillation, myocarditis, and cardiomyopathy, then the final and most certain diagnosis (that my doctors abandoned me with) was and autoimmune disease that affects the brain and spinal cord called MS.

Upon learning later that I had Lyme-encephalitis, an infection of the brain that mimicked MS, I became curious if MS had a history of being associated with LD and other spirochete diseases such as relapsing fevers?

It took very little time to uncover the truth. The cause of relapsing fevers was discovered in the early 1900's as being caused by *Borrelia* spirochetes; the same genus of bacteria that causes LD. By 1911 the most prestigious medical journal in the world *The Lancet* reported that spirochetes could sometimes be observed in the grey matter of the brains of MS patients.

Most of the work associating the spirochetes with the sclerotic brain lesions in MS patients was being done in England, France and Germany. When World War-II broke out all this work came to a crashing halt, and never truly resumed in earnest. Although the research ended abruptly, well over fifty published studies relating spirochetes to MS had been published.

Some of these early researchers had even transferred the living spiral shaped bacteria into the tail-vein of various animals, and recovered the bacteria out of the brains of the same animals. It was clear that the so-

called "MS spirochete" harvested from humans with MS-lesions could cause similar lesions in the brains of various animal models.

It is unfortunate that WW-II interrupted cooperation and research between nations. It has only been in the past decade that modern day scientists have used better tools of science to indeed confirm that *Borrelia* spirochetes are frequently associated with MS.

In my medical journey I have mostly been interested in the role that LD has played in the ever growing and increasing incidence of MS in the Northern Hemisphere, but I soon learned that I was taking a very narrow view of the possible causes of MS.

It is now clear from the work of Bonnie Bennett and others that MS and relapsing fevers have been closely intertwined for over a century, and that we must now consider all causes of neuroborreliosis as possible initiation of the autoimmune/inflammation process that we currently label as brain-sclerosing-disease or MS.

## AUTHOR'S PREFACE

Relapsing fever is not a new disease, and it is not rare as we are led to believe. It was described by Hippocrates, although the primary sources of the febrile illness the microbial agents *Borrelia spirochetes* were not discovered until 1868 by Obermeier. The spirochetes that cause syphilis (*Treponemapallidum spirochetes*) were later discovered in 1905. Spirochetes are among the oldest microbes on earth. Microbiologist, Dr. Lynn Margulis proclaimed that spirochetes were the first anaerobic bacteria on earth, in existence for over three billion years.

According to Dr. Margulis, ninety-nine point nine percent of species that have ever existed on earth are now extinct. It is obvious that spirochetes are cleverly adaptable to have outlived all those others that did not survive. These most remarkable microbes have had to adapt to countless changes within a microcosm of competing organisms, climatic and environmental changes and, most importantly, they had to not only conquer or get along with competing microbes, but actually benefit from such parasitic associations in order to survive. Spirochetes have evolved to become widely diverse and some are pathogenic while others are thought to be beneficial to humans. The kinds of *Borrelia* spirochetes discussed in this book are primarily transmitted by ticks, those that can cause illness in humans.

*Borrelia* is not the only microbe or toxin that can be transmitted by arthropods such as lice, but namely ticks and a variety of insects that transmit multiple kinds of microbes that cause illnesses in humans.

Ticks are efficient vectors that can feed on the blood of their preferred animal reservoirs and later transmit various disease agents that are pathogenic to humans and animals through bites, and in the case of lice, through the pores and lesions of skin when lice are crushed by scratching. Airborne feces dust is another mode of transmission.

The soft-bodied *Ornithodoros*, nocturnal, painless, and quick-feeding ticks that cause relapsing fever are different from the hard-shelled, burrowing into your skin for days, *Ixodes* ticks that cause Lyme borreliosis, commonly called Lyme disease. *Ornithodoros* ticks can live up to 25 years without feeding and still be capable of transmitting *Borrelia*. (Personal communication w/W. Burgdorfer, PhD) The females can pass *Borrelia* down via trans-ovarial transmission to the eggs of their progeny. The victims of these soft-bodied ticks rarely, if ever, see them because they feed painlessly at night for only about ten minutes and then leave the host. Whereas *Ixodes* hard-bodied ticks have a very short-

cycled life, they are almost always detectable because they burrow into skin, remaining firmly attached to feed for more than a day or so.

Since 1982 when the agent of Lyme disease (LD) was discovered to be *Borrelia burgdorferi*, its complications of later chronic effects have been well documented over months and years. *Relapsing fever* (RF) types of borreliae that encompass multiple species and strains of *Borrelia* worldwide were already known to cause similar "early" complications since the discovery of *Borrelia* at the turn of the last century.

Unlike the chronic conditions that have been recently related to LD, the chronic phases of tick-borne relapsing fever (TBRF) and louse-borne *Borrelia*, *Borrelia recurrentis*, and/or countless additional species and strains have never been documented or studied in humans. A prime example of this is the study of oral spirochetes where at least 20 different species and strains of spirochetes can cause many multi-system chronic diseases to include cancer yet that fact is unknown to most of the medical community.

It is erroneously assumed that relapsing fever diseases are self-limiting after a few relapses. Long-term chronic effects studies are long overdue because that assumption is badly mistaken.

In the pages that follow you will read about my personal experience with the long-term effects of these infections and the knowledge I gained after nearly forty years of observations regarding the under-diagnosed and underestimated disease called tick-borne relapsing fever (TBRF) and its related consequential diseases.

Bonnie Bennett



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## INTRODUCTION

In November of 1995, our 34-year-old son, Doug, was diagnosed as having probable multiple sclerosis (MS). His MS diagnosis at that time erased all doubts in my mind that MS or MS-imitators can develop in some people many years after tick-bite exposures.

Thirteen years earlier, in 1982, I had studied tick-borne infections extensively because our entire family and many friends and neighbors in our Lake Tahoe vacation homes neighborhood were mysteriously ill with fevers. I soon learned that our fevers were caused from exposure to chipmunk ticks. Chipmunk ticks feed painlessly and briefly for only a few minutes at night and these soft-bodied ticks are rarely seen by the victims they bite. Consequently, neither the victims nor their physicians realize that tick-transmitted infections are the cause of the febrile illnesses that manifest a week or two later.

Many people in our Tahoe neighborhood suffered lingering symptoms and exhaustion after experiencing the initial mysterious fevers that recurred repeatedly for several months. One of several chronic conditions I associated with the fevers early on was MS, but I never expected that our son Doug would many years later become one of the unfortunate victims to develop this serious, misunderstood disease manifestation following his earlier exposure to tick-borne relapsing fever (TBRF).

Neither did I know at that time that his best friend Martin, who later married my niece, would tragically die from a malignant tumor—adenoid cystic carcinoma—over a decade after his tick bite infection. The more I learned the more I came to realize that our Lake Tahoe neighborhood was not the only endemic area for TBRF. It is quite common where ponderosa pine forests, chipmunks, and other small rodents exist, especially at elevations above three thousand feet.

TBRF is not rare, but the long-term, multi-system effects have never been documented. These pages tell what I and others have experienced. This is not to say that tick bites are the cause of all diseases, yet be assured that their infectious agents *can* cause almost anything.

This story is based upon events that happened in my family's lives and lives of others. It is not meant to be taken as medical advice or conclusive scientific fact. Our story needs to be told because no one has ever observed the later complications of relapsing fever *Borrelia* such as I and the people within this book have done. I can only relate what I believe is true from my experience and hope that others will benefit from

reading about it.

Much of my story relates to Lake Tahoe and Arizona, but that is because we were living in those places. It does not mean that those areas are the only places that TBRF is endemic. TBRF is a worldwide infection, and I repeat, that it is largely endemic in ponderosa pine country and areas above three thousand feet elevation. I see no need to avoid these areas, only to become aware and educated as to what measures can be taken to avoid or deal with the possibility and consequences of contracting TBRF.

Allow me to flash back to the mid-1970's and start this story at the beginning so you, the reader, can gradually learn as I did about a seemingly complicated subject, and then be able to readily understand as to how I arrived at some conjectures early on, most of which later proved to be accurate.

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