BOOK REVIEW

D. Lipsker and B. Jaulhac (Eds.): Lyme Borreliosis. Biological and Clinical Aspects. Current Problems in Dermatology, Vol. 37. Karger, Basel, Switzerland, 2009. ISSN 1421-5721, ISBN 978-3-8055-9114-0, VI + 212 pp., 13 figs., 8 in colour, 11 tables, hard cover. Price: EUR 153.50, USD 215.00, CHF 215.00.

The monograph edited by Dr. Dan Lipsker of the Dermatology Clinic, University Hospital, Strasbourg, France and Dr. Benoît Jaulhac of the Laboratory of the National Reference Centre for *Borrelia*, Strasbourg, France, bringing together invited chapters authored by leading scientists in the research of Lyme borreliosis (LB), appears as a separate volume in the series Current Problems in Dermatology. It offers an expert overview of LB in general, providing the current state-of-art in epidemiology, diagnosis, treatment, bacteriology and serology, focused mostly on clinical aspects of the disease. The book is divided into two parts, each with six chapters. While the first six chapters review specific topics, the chapters in the second part answer frequently asked questions. The scientific and informative value of both parts is of top level. Nevertheless, as might be expected from multi-authored book, some repetitions and discrepancy can be observed, e.g., in cases of definition of LB and description of its causative agent. On the other hand, the book exemplifies how fast the knowledge on this expanding subject develops in almost each topic discussed. Listing the 12 or 13 species within the *Borrelia burgdorferi* sensu lato (s.l.) complex was probably correct at the time of book preparation. However, as of today there have been already 14 species and 2 genomospecies of *B. burgdorferi* s.l. complex described and recognised. It is obvious that the description of new *Borrelia* species is just a matter of time as their diversity and distribution is remarkable. The same concerns the number of species confirmed to be involved in human LB. Until recently, three spirochete genomospecies were considered to cause LB in Europe, i.e., *Borrelia burgdorferi* sensu stricto (s.s.), *B. afzelii*, and *B. garinii*. However, the DNA of *B. valaisiana*, *B. lusitaniae*, *B. spielmanii* and *B. bissettii* has already been detected in samples of human origin or these spirochetes were isolated from patients with symptoms of LB. The pathogenic potential of *B. valaisiana* was suspected among patients with erythema migrans based on polymerase chain reaction. Association of *B. valaisiana* with chronic clinical symptoms was also proved. Molecular analysis of spirochete isolates identified as *B. lusitaniae* from a Portuguese patient suggests a clinical pattern for *B. lusitaniae* different from the other *Borrelia* spp. examined so far. The role of *B. spielmanii* as a causative agent of LB was confirmed by reported cases of patients with erythema migrans in the Netherlands, Germany, Hungary and Slovenia. After the first isolation of *B. bissettii* from samples of human origin in Slovenia, the following detection of this species as a single strain in cardiac valve tissue of a patient with endocarditis and aortic valve stenosis and in serum samples of patients with suspected borreliosis in the Czech Republic support the fact that *B. bissettii* is a causative agent of Lyme borreliosis in Europe (reviewers' comment).

In the first of the specific chapters, G. Baranton and S.J. De Martino give detailed description of known *Borrelia* spe-

cies, their pathogenicity, genetic diversity, taxonomy with rational evaluation of established techniques for identification and spectrum of hosts and vectors. The authors present an interesting hypothesis of species pathogenicity and the lateral gene transfer. While the book was in preparation a new 14th species from *B. burgdorferi* s.l. complex, *B. carolinensis*, was recorded in the southern United States (reviewers' comments). The authors consider *B. bissettii*, *B. lusitaniae* and *B. valaisiana* to be the species that are "rarely if at all pathogenic for humans". As their involvement in LB has been confirmed recently, this point of view can be discussed. L. Gern discusses the life cycle of *B. burgdorferi* s.l., its transmission to humans and the biology of *Ixodes ricinus*. Interesting data on geographical distribution of *Borrelia*, species representation in Europe and importance of mixed infections are presented. The role of mammals, birds and reptiles as reservoir hosts for *B. burgdorferi* s.l. in Europe is outlined. Analysis of the migration mechanism of spirochete inside tick body and its association with variable expression of tick proteins adds to the understanding of dynamics of transmission of *B. burgdorferi* s.l. by *I. ricinus* to vertebrate hosts. Z. Hubálek analyses the worldwide epidemiology of LB, its geographic distribution and incidence rate which covers 36 European countries, 12 states from the United States of America and Canada, 9 Asian and 4 African countries. He summarises the up-to-date knowledge on the epidemiology of LB and briefly discusses environmental factors and patient characteristics and their effect on LB incidence. While authors from the USA state that transmission of borreliae may occur only 48 hours after tick attachment, European scientists believe that spirochete transmission may happen as early as 8 hours after tick attachment. The chapter by F. Strle and G. Stanek deals with clinical manifestation and diagnosis of LB and is supplemented with colour pictures of LB clinical manifestations and histological findings. It supplies the largest reference list in the book (274 publications). The authors analyse the main clinical manifestations of LB involving skin (erythema migrans, acrodermatitis chronica atrophicans and borrelial lymphocytoma), nervous system (Lyme neuroborreliosis), heart (Lyme carditis), joints (Lyme arthritis), and eyes. The authors discuss the rare manifestations of the disease as well as "Chronic LB". This term is called "misnomer" by authors in the USA who reject to recognise the chronic stage of LB due to the lack of supportive laboratory data. The following chapter by Y. Hansmann discusses the questions of treatment and prevention of LB. It reviews the use of different types of antibiotics in treatment of different stages of LB; their use depends on the unique pathophysiology of LB which involves bacterial infection as well as human immune response. Detailed protocols for treatment of primary (early), secondary (early disseminated) and tertiary (late) LB in patients of different age are also given. Such data might be of interest to any physician or anyone who wants

to know about the available methods of LB treatment. Attention is also paid to different strategies in LB prevention. Chapter contributed by I. Bitam and D. Raoult deals with the analysis of other tick-borne diseases in Europe, some of which can cause severe or fatal illnesses (anaplasmosis, relapsing fever, tularemia, tick-borne encephalitis, tick-borne babesiosis and tick-borne rickettsiosis). The authors present detailed description of *Rickettsia* species and subspecies as the causative agents of tick-borne rickettsiosis. A valuable overview of each tick-borne disease and the required intervention is outlined by the authors.

In the second part of the book the important topics are addressed in form of frequently asked questions. E. Aberer answers the question what one should do in case of a tick bite. She states that the risk of *B. burgdorferi* infection increases with the time of tick engorgement. The finding of *B. burgdorferi* DNA in tick does not prove that the patient will subsequently develop LB. This information is significant especially for the population living on the territory infested by ticks, which is not really aware of the damage that can be done by them. Clear instruction for action in case of necessity and precaution for everyone participating in outdoor activities is also presented. K.-P. Hunfeld and P. Kraiczy discuss the question of the best time to order a Western blot and how it should be interpreted. Despite molecular techniques, the detection of a specific antibody response remains the mainstay in laboratory diagnosis. Detailed introduction of immunoblot assays is suggested by the authors. The sensitive detection of specific antibodies is problematic because immunodominant antigens of the *Borrelia* species pathogenic to humans tend to show significant variability. The question whether serological follow-up is useful for patients with cutaneous LB is discussed and answered by R.R. Müllegger and M. Glatz. Antibiotic therapy is obligatory in every case of cutaneous LB to eliminate *B. burgdorferi* s.l. Persistent positive IgG and/or IgM antibody titres do not indicate the treatment failure. Due to unpredictable and variable antibody titre development after therapy, the assessment of patients with cutaneous manifestations of LB rests primarily on the clinical picture. The understanding of borrelial infection in pregnancy and a rationale for the management of LB in pregnant women is presented by V. Maraspin and

F. Strle in their chapter on management of tick bites and LB in pregnant woman. The authors do not recommend the use of prophylactic antibiotics especially in pregnancy. They support the “wait and watch” strategy (if signs of the disease will appear). The influence of borrelial infection on the foetus is not clear yet, but the authors list circumstances in which infection of a pregnant woman with spirochetal diseases (e.g., syphilis, relapsing fever and leptospirosis) may have detrimental influence on the foetus. In cases of other spirochetal diseases, such as syphilis, relapsing fever and leptospirosis, the causative agents were known to have passed transplacentally from the infected mother to the foetus. Actually, several cases of *in utero* transmission of *B. burgdorferi* s.l. have been reported in humans and animals, but the proof of borrelial infection was rather vague. The question what should be done in case of persistent symptoms after adequate antibiotic treatment for LB is answered by X. Puéchal and J. Sibia. The problem is that most patients with LB remain seropositive for a long period without the possibility to differentiate between cured and active infection. The number of issues raised by persistent complaints of patients with a prior diagnosis of LB is mentioned and the treatment of such patients is dealt with. In conclusion, the authors pre-cause from the risk of unnecessary antibiotic therapy. The use of emotional or psychological support is recommended in case of diagnoses for which no specific treatment can be proposed. The concluding question, what are the indications for lumbar puncture in patients with LB, is answered by T.A. Rupprecht and H.-W. Pfister. They clarify the definition of Lyme neuroborreliosis (LNB), the indication of a lumbar puncture and show the limitation of the different diagnostic procedures of LNB. Lumbar puncture is the mandatory tool in the diagnosis of LNB and all patients with neurological symptoms.

The editors have accomplished a good job in completing a valuable and interesting book that is full of scientific data and useful clinical information. This volume provides an excellent resume that was sorely needed and we recommend it to anyone who is interested or involved in LB from scientific, professional or personal point of view.

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