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Borrelia Lyme Group

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Borreliaceae is a family of the phylum Spirochaetales and includes two genera, Borrelia and Cristispira genus. Borrelia genus is divided into three groups, namely Lyme group (LG), Echidna-Reptile group (REPG) and Relapsing Fever group (RFG). All Borrelia species have an obligate parasitic lifestyle, as they depend on their hosts for most of their nutritional needs. Borreliae are transmitted among vertebrate hosts by arthropod vectors (ticks and lice). Transtadial transmission within their carriers occurs for the Borreliae RF Group, while this does not (or rarely occurs) for the Borreliae Lyme Group. Phylogenetic data demonstrated that these two groups are genetically similar but distinct, forming independent clades sharing a common ancestor. In nature, the vectors of LB belong to the genus Ixodes spp. frequently found in the Northern Hemisphere, while the vectors of RF are usually the soft-ticks (Ornithodoros spp.). Borreliae share a unique genomic structure consisting of a single highly conserved linear chromosome and several linear and circular extrachromosomal plasmids which can vary widely between strains. In addition to Lyme and RF borreliosis, an intermediate group, called Echidna-Reptile borreliosis, has recently been identified.

Lyme disease (LD) is caused by the spirochæte Borrelia burgdorferi sensu lato (s.l.) and transmitted to humans by the bite of a hard tick of the genus Ixodes, and LD reservoir are usually small rodents. LD is present in America, Eurasia, Africa, while its presence in Australia is not yet well documented. Not all Borreliae Lyme Groups cause this disease in humans. Of the 23 Borreliae burgdorferi s.l. currently known only 9 have been identified in human infection, namely Borrelia burgdorferi sensu stricto, B. afzelii, B. bavarensis, B. bissettii, B. garinii, B. lusitaniae, B. spielmani, B. valaisiana, and B. mayonii. LD is an organotropic infection, but there is also a spirochætemic form, caused by **Borrelia mayonii**, which gives fever similarly to the Borreliosis RF Group. A third variant of LD is Baggio-Yoshinari Syndrome (BYS), which is transmitted by another hard tick, Amblyomma cajennense. This Borrelia has not been isolated in culture, therefore its membership in the Lyme Group is not yet proven. All three of these Sub-Groups can manifest early with erythema migrans. Clinical features of LD are wide and variable, with clinical manifestations linked to distinct tissue tropisms of specific Borrelia burgdorferi s.l. genospecies. The early infection is localized and, in the absence of treatment, the spirochete can spread. The organs most frequently involved are skin, joints, muscles, nervous system, heart and eyes. B. burgdorferi s.s. is more often associated with Lyme arthritis, Borrelia garinii with neuroborreliosis and B. afzelii with **acrodermatitis** chronica atrophicans.

Biography

Prof. Giusto Trevisan is graduated in Medicine and Surgery from the University of Trieste. Since 1985 he has been Associate Professor of Dermosyphilopathic Clinic. Since 1975 he has been the Director of the Clinic of Dermatology and Venereology of the University of Trieste and since 1977 Director of the School of Specialization in Dermatology and Venereology until 31 October 2017.

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