The human body may confuse Borrelia burgdorferi with its own tissue

- LYMExir, the US-Bb-vaccine on Osp-A-basis, has been recalled because of side-effects (Feb. 2002)
- Some of side-effects may be caused by "molecular mimicry" of Osp-A with hLF-A
  - arthritis complaints
  - possibly impaired leucocyte-funktion
- Part of the side-effect can be induced without vaccination
- Cross-reactivity of 41kD with myelin of peripheral nerves

2. Steere AC, Gross D, Meyer AL, Huber BT; J Autoimmun 2001 May;16(3):263-8; Autoimmune mechanisms in antibiotic treatment-resistant Lyme arthritis

Quorum sensing - Bacterial interactions: What’s that?

Why are micro-organisms simultaneously active?
How do they communicate?
Do we find this phenomenon at Bb?

LuxS Possible implications for LD:
- "up-regulation" of erp / OspE (CRASPs)
- "flares" - symptoms can be active at different points of the body


Parts of Bb cell wall protect Bb from the host defence system
by manipulation of complement Systems (CRASPs)
 Factor H binding OspE


Heterogeneity, antigenshift and antigendrift may lead to

- immunevasion
- difficulties in serologigal testing
- symptom-flares like relapsing-fever

2. Fang et al.: An Immune Evasion Mechanism for Spirochetal Persistence in Lyme Borreliosis; JEM Vol 195; No.4; Febr. 18, 2002 415-422

Co-Infections with

Babesia
  - ca. 5% seropositive, "healthy" adults

Ehrlichia

Bartonella
  - cat-scratch-disease
  - cases of death at Swedish "elite-cross-runners", eg myocarditis

Rickettsia
  - spotted fever

FSME / TBE (Virus)

Other Borrelia-species
  - relapsing fever


Borrelia burgdorferi-debris can make you ill

Lysis of Bb, e.g by taking antibiotics, may release cell wall pieces

- acute: Herxheimer-reaction
- It’s estimated that parts of Bb cell wall of gram negative bacteria) are responsible for a severe course of illness (Lyme-encephalopathy)
- ca. 3% dry-weight of Bb are LPS
  - Perhaps colestyramine inhibits the entero-hepatic (chyllic) circulation of toxins
  - production of ectotoxins, Bbtox-1, (like Botulinus-toxin?)

1. pro NT: Zajkowska, Juchnowitz; Przegl Epidemio 2002; 56 Suppl 1:37-50 (Abstract)
3. contra LPS: Takayama; 1987, Absence of LPS in Bb; Infect. Immun. 55, 2311-13

Borrelia burgdorferi may lead to immune-deficiency

Bb suppresses inflammation (TNF-α, γ-interferon, G-CSF)
  - possibly no fever
  -lack of : ESR, CRP, leucocytes-function

Trial: supplication of G-CSF (Hartung, Konstanz)

2. Current study of Universität Konstanz about antibiotics plus Neutrophen for the treatment of LD
3. Immunology Volume 107 Issue 1 Page 46 - September 2002 ; Cytokines in Lyme borreliosis: lack of early tumour necrosis factor-alpha and transforming growth factor-beta1 responses are associated with chronic neuroborreliosis, Mona Widhe

"When diagnosed early, borreliosis can be treated successfully with antibiotics. If the infection is not diagnosed, diagnosed too late or treated with an inadequate or overly short course of antibiotics, a chronic course of the disease may develop affecting the nervous system, joints and heart which is difficult or even impossible to treat."

2. D.T. Dennis, CDC; oral presentation, IPS VI, Berlin 2001 - "...sometimes it's severe or disabling, in particularly, when the diagnosis is missed early..."