

Lyme disease and Oncothermia

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Published: <http://www.hindawi.com/cpis/medicine/2013/275013/>

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Abstract

Lyme-Disease is a tick-borne disease with multiple organ failure and systemic disorder. Dramatic change becomes apparent in the chronic phase of the disease. Chronic fatigue syndrome, lapse of concentration, depression, joint pain, muscle pain are a few, but major clinical symptoms characterizing the disease. The human immune-system is defenseless. *Borrelia* uses various mechanisms to escape from immuno-attacks or antibiotic therapies. This „stealth phenomenon“ needs new therapeutic principles to be interrupted. Our objective in this paper is to study the effect of oncothermia, which is a well-established oncological therapy, in Lyme disease. First, in our present work, we definitely concentrate on the quality of life of the patients.

Background

Lyme borreliosis (LB), or Lyme disease, is transmitted by ticks of the *Ixodes ricinus* complex. Its manifestations had been documented [1]. The etiologic agent, *Borrelia burgdorferi*, was first isolated from the vector tick *Ixodes dammini* (now *I. scapularis*) [2]. *Borrelia burgdorferi* is a bacterial species of the spirochete class of the genus *Borrelia*, which has a double-membrane envelope [3]. *Borrelia burgdorferi* is one of the few pathogenic bacteria that can survive without iron, having replaced all of its iron-sulfur cluster enzymes with enzymes that use manganese, thus avoiding the problem many pathogenic bacteria face in acquiring iron. It takes more than 24 hours of attachment for transfer of *Borrelia burgdorferi*. Huge development was made during the past 20 years understanding *Borrelia burgdorferi*, and its consequent illness. Its microbiology [4], epidemiology [5], diagnosis [6], [7] and clinical practices [8], [9], [10] are studied in details.

Clinical symptoms of Lyme disease are serious. Listing only some major of them: fatigue syndrome, lapse of concentration, depression, joint pain, muscle pain, erythema chronicum, as well as myocarditis, cardiomyopathy, arrhythmia, arthritis, arthralgia, meningitis, neuropathies and facial nerve palsy.

Borrelia burgdorferi infections have been linked to non-Hodgkin lymphomas, [11]. Oncothermia, well known in cancer-therapy [12], might be an adequate method for treatment of Lyme disease. The applied bioelectromagnetic energy absorption acting on the cellular membrane [13] and on its regulation [14], tuning the parameters to the membrane destruction [15]. The applied interaction radiofrequency (RF) range, (RF carrier with LF modulation [16], [17]); coupled by impedance (capacitive) mode could act on the cell-membrane states of the bacteria. The huge temperature gradient on the membrane could modify the HSP structure shown by DNA array involving first of all the HSP60 and HSP70 chaperones proteins [18]. *Borrelia burgdorferi* is especially sensitive on the membrane-states of these HSPs [19], [20], so the effect is expected. Furthermore, the applied modulation of oncothermia [21] could be a useful tuning parameter for selection of the bacteria.

Method

12 patients (8 male and 4 female; mean age 55 y, [39÷76]) suffering from lyme-disease the influence of oncothermia on healing processes was examined in this pilot-study. Their medical history was the cohort forming ability. Tick bite was recognized for 75% (9/12) patients, erythema migrans 50% (6/12), antibiotics pretreatment was made for all (12/12) and the typical symptoms of lyme-disease/lyme-neuro-disease was registered for all (12/12). All the patients were ELISA positive (12/12) and WesternBlot positive (12/12) as well. LTT positive was 42% (5/12) and positive in their cerebrospinal fluid was in 17% (2/12). Due to the complicated and very expensive laboratory tests, the effects were measured on the quality of life of the patients. For this measurement a special questionnaire was prepared, concentration on three questions: general feeling today, feeling physically and feeling psychologically. Valuation was made in grades on a 1-6 scale, (1=excellent, 6=inadequate/very bad).

Treatments were done by oncothermia method (EHY3000, Oncotherm GmbH, Germany), the duration was 60 min pro session. Treatments were 3 times in a week, and all together 10 sessions were provided. The heating protocol was a step-up heating (70/100/130/150 W) with modulation, using electrode 40x70 cm area,

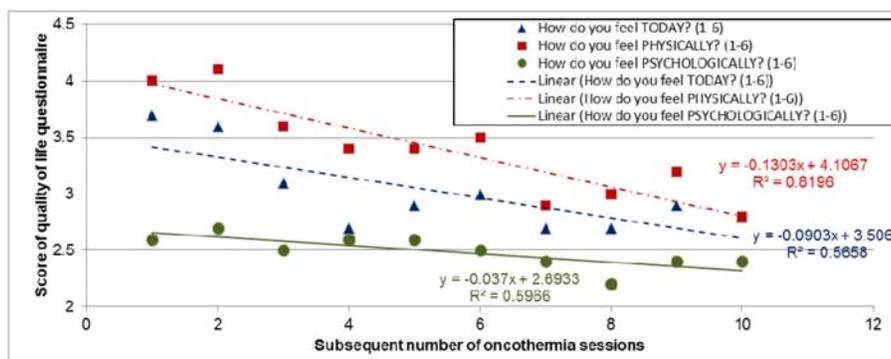
applied it for the trunk of the patients. As drug-support Minocyclin/Hydrochloroquin were used when indicated.

Complementary supportive therapy was applied: HighDose VitaminC 7.5 gr; Vitamin B12; Glutathion; Homoepathics to support emunctories; Medicated Mushrooms (Capsule); Supplementary like VitaminD, Calcium, Magnesium.

Results

The evaluation of the development of the quality of life shows remarkable improvement (see table and figure, points are averages of the 12 patients answers).

questions/number of oncothermia sessions	1	2	3	4	5	6	7	8	9	10
How do you feel TODAY? (1-6)	3,7	3,6	3,1	2,7	2,9	3,0	2,7	2,7	2,9	2,8
How do you feel PHYSICALLY? (1-6)	4,0	4,1	3,6	3,4	3,4	3,5	2,9	3,0	3,2	2,8
How do you feel PSYCHOLOGICALLY? (1-6)	2,6	2,7	2,5	2,6	2,6	2,5	2,4	2,2	2,4	2,4



In the majority of cases dramatic improvement in physical state occurred, a better respond to other therapeutic treatments. Especially neurological disorders could be influenced positive. Patient feels as good as never before, can do housekeeping again, and could do her/his work again. Who was frequently absent form the school after the treatment regularly visited the lessons again, etc. Adverse effects were sometimes headache and rarely neuropathic symptoms during the treatment.

Conclusion

Oncothermia is an important module in treatment-concept of Lyme disease. Mechanism of action against stealth development should be objectified. Procedure of Oncothermia-treatment (power/treatment-time/treatment frequency) should be defined. Synergies with other treatments should be objectified. Oncothermia should become a vital component in therapeutical treatment of Lyme-disease.

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