

## The effect of use of antibiotics on test results

### Testing:

- 1.5 Treatment with antibiotics can result in suppression of antibody response and negative serology tests. There are many studies that indicate this and in the Ledue study using standard 2 tier methodology, antibiotic treated patients were seronegative in 56% of cases compared to 30% in untreated patients. This has specific relevance where a patient is treated with antibiotics for a suspected but non-specific infection or suspected Lyme disease a Borreliosis serology test. A negative test result then suggests that the patient never had Lyme disease, or that it has been sufficiently treated.

### Source:

- 1) *Antibiotic therapy may abrogate the antibody response to the infection as shown in our patients.*  
*We conclude that early stage of the disease as well as chronic Lyme disease with persistence of B. burgdorferi after antibiotic therapy cannot be excluded when the serum is negative for antibodies against B. Burgdorferi.* (Preac-Mursic et al. 1989)
- 2) *A reduction in the clinical sensitivity of the two-test protocol was associated with a lack of antibody response.*  
*...all of the Lyme disease subjects in group 2 had either been treated or were being treated with antibiotics at the time that the specimen was drawn,*  
The results were compared to sample taken prior to treatment. The data is in Tables 2 & 3 and summarised here:

Sensitivity of serology testing	Antibiotic treated patients	Untreated patient samples
	Sensitivity %	Sensitivity %
Early Lyme disease	50.0	85.7
Late Lyme disease	42.9	50
All Lyme disease	43.9	69.2

From: (Ledue et al. 1996)

- 3) *Many patients with active or recent infections do not have detectable anti-Bb in a single specimen. This happens because such antibodies often develop after manifestations of early infection or because detectable anti-Bb may diminish or never develop in patients treated with antibiotics.*(Brown et al. 1999)
- 4) *Antibiotic treatment seems to interrupt the increase of spirochetal antibody levels and in most cases eliminates the possibility of serological diagnosis by determination of significant titer increase.*(Stiernstedt et al. 1985)
- 5) *We have shown that the antibody response to IR6 ELISA, wanes rapidly after antibiotic treatment by the C6 of a B. burgdorferi infection in experimental animals and humans.* (Philipp et al. 2001)
- 6) *In convalescent sera (collected at 2–3 and 6 months) from patients with erythema migrans treated with antibiotics, a significantly lower seropositivity for the IQC6 test was noted....* (Tjernberg et al. 2007)
- 7) An early paper frequently cited reported that early antibiotic treatment arrested specific antibody production. Shrestha, BS, Grodzicki, MS, Steere, AC: Diagnosing early Lyme disease. Am J Med 78: 235–240, 1985

## Bibliography

Brown, S.L. et al., 1999. Lyme Disease Test Kits: Potential for Misdiagnosis. *Center for Devices and Radiological Health*. Available at: <http://sites.google.com/site/drjoneskids/lab-tests/fda-warning> [Accessed July 14, 2011].

Ledue, T.B., Collins, M.F. & Craig, W.Y., 1996. New laboratory guidelines for serologic diagnosis of Lyme disease: evaluation of the two-test protocol. *Journal of clinical microbiology*, 34(10), pp.2343-50. Available at: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=229265&tool=pmcentrez&rendertype=abstract> [Accessed February 9, 2012].

Philipp, M.T. et al., 2001. Antibody response to IR6, a conserved immunodominant region of the VlsE lipoprotein, wanes rapidly after antibiotic treatment of *Borrelia burgdorferi* infection in experimental animals and in humans. *The Journal of infectious diseases*, 184(7), pp.870-8. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/11550127>.

Preac-Mursic, V. et al., 1989. Survival of *Borrelia burgdorferi* in antibioticly treated patients with Lyme borreliosis. *Infection*, 17(6), pp.355-9. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/2613324> [Accessed February 5, 2012].

Stiernstedt, G.T. et al., 1985. Diagnosis of spirochetal meningitis by enzyme-linked immunosorbent assay and indirect immunofluorescence assay in serum and cerebrospinal fluid. *Journal of clinical microbiology*, 21(5), pp.819-25. Available at: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=271789&tool=pmcentrez&rendertype=abstract>.

Tjernberg, I., Krüger, G. & Eliasson, I., 2007. C6 peptide ELISA test in the serodiagnosis of Lyme borreliosis in Sweden. *European journal of clinical microbiology & infectious diseases : official publication of the European Society of Clinical Microbiology*, 26(1), pp.37-42. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/17180348> [Accessed January 27, 2011].