

Herzkrankheit und Borrelieninfektion Heart disease and Borrelia infection

Steere AC, Batsford WP, Weinberg M, et al. (1980) Lyme carditis: cardiac abnormalities of lyme disease. *Ann Intern Med* 93, 8–16 [CrossRef](#) [MEDLINE](#)

Cornuau L, Bernard M, Daumas PL, Oblet B, Poirot G, Valois M (1984) Les manifestations cardiaques de la maladie de lyme: a propos de deux observations. *Ann Cardiol Angeiol* 33, 395–9 [MEDLINE](#)

Marcus LC, Steere AC, Duray PH, Anderson AE, Mahoney EB (1985) Fatal pancarditis in a patient with coexistent lyme disease and babesiosis. Demonstration of spirochetes in the myocardium. *Ann Intern Med* 103, 374–6 [CrossRef](#) [MEDLINE](#)

Allal J, Coisne D, Thomas P, et al. (1986) Manifestation cardiaques de la maladie de lyme. *Ann Med Interne* 137, 372–4 [MEDLINE](#)

Kapusta R, Fauchier JP, Cosnay P, Huguet R, Grezard O, Rouesnel P (1986) Troubles conductifs sinuauriculaires et auriculo-ventriculaires de la maladie de lyme: a propos de deux observations. *Arch Mal Coeur* 79, 1361–6 [MEDLINE](#)

Kirsch M, Ruben FL, Steere AC, Duray PH, Norden CW, Winkelstein A (1988) Fatal adult respiratory distress syndrome in a patient with lyme disease. *JAMA* 259, 2737–9 [CrossRef](#) [CrossRef](#)

van der Linde MR, Crijns HJ, Lie KI (1989) Transient complete AV-block in lyme disease: electrophysiologic observations. *Chest* 96, 219–21 [CrossRef](#)

Mc Alister HF, Klementowicz C, Andrews JD, Fisher JD, Feld M, Furman S (1989) Lyme carditis: an important cause of reversible heart block in lyme disease. *Ann Intern Med* 110, 339–45 [CrossRef](#)

Stanek G, Klein J, Bittner R, Glogar D (1990) Isolation of borrelia burgdorferi from the myocardium of a patient with long-standing cardiomyopathy. *N Engl J Med* 322, 249–52 [CrossRef](#) [MEDLINE](#)

Cary NR, Fox B, Wright DJM, Cutler SJ, Shapiro LM, Grace AA (1990) Fatal lyme carditis and endodermal heterotopia of the atrioventricular node. *Postgrad Med J* 66, 134–6 [CrossRef](#)

van der Linde MR, Crijns HJ, de Koning J, et al. (1990) Range of atrioventricular conduction disturbances in lyme borreliosis: a report of four cases and review of other published reports. *Br Heart J*. 63, 162–8 [CrossRef](#) [MEDLINE](#) [PubMed Central](#)

Stanek, G., Klein, J., Bittner, R. and Glogar, D. (1991) Borrelia burgdorferi as an Etiologic Agent in Chronic Heart Failure? *Scandinavian Journal of Infectious Diseases. Supplementum*, 77, 85-87.


Cox J, Kraiden M (1991) Cardiovascular manifestations of lyme disease. *Am Heart J* 122, 1449–55 [CrossRef](#)

van der Linde MR (1991) Lyme-carditis: clinical characteristics of 105 cases. *Scand J Infect Dis* 77, 81–4 [MEDLINE](#)

Woolf PK, Lorusong EM, Edwards KS (1991) Electrocardiographic findings in children with lyme disease. *Pediatr Emerg Care* 7, 334–6 [CrossRef](#)

Gasser R, Dusleag J, Fruhwald F, Klein W, Reisinger E. (1992) EARLY ANTIMICROBIAL TREATMENT OF DILATED CARDIOMYOPATHY ASSOCIATED WITH BORRELIA BURGENDORFERI [LETTER; COMMENT] *Lancet* 340(8825), 982 <http://www.ncbi.nlm.nih.gov/pubmed/1357392>

Vegsundvag, J., Nordeide, J., Reikvam, A. and Jennum, P. (1993) Late Cardiac Manifestation of Infection with Borrelia burgdorferi (Lyme Disease). *BMJ*, 307, 173. <http://dx.doi.org/10.1136/bmj.307.6897.173>

- Reimers CD, de Koning J, Neubert U, et al. (1993) Borrelia burgdorferi myositis: report of eight patients. J Neurol 1993; 240: 278–83 [CrossRef](#) [MEDLINE](#)
- Waniek C, Prohovnik I, Kaufman MA, Dwork AJ (1995) Rapidly progressive frontal-type dementia associated with Lyme disease. J Neuropsychiatr Clin Neurosci 7, 345–7 [CrossRef](#)
- Lorincz I, Lakos A, Kovacs P (1989) Temporary pacing in complete heart block due to Lyme disease: a case report. PACE 12, 1433–6 [CrossRef](#)
- [Pinto DS](#) (2002) **Cardiac manifestations of Lyme disease**. Med Clin North Am. 86(2), 285-96. <http://www.ncbi.nlm.nih.gov/pubmed/11982302>
- Haddad FA, Nadelman RB (2003) Lyme disease and the heart. Front Biosci 8, 769-782
- Scheffold N, Bergler-Klein J, Sucker Chr, Cyran J (2003) **Kardiovaskuläre Manifestationen der Lyme-Borreliose**: Therapeutische Situation im chronischen Stadium problematisch. Dtsch Arztebl 100(14), A-912 / B-767 / C-717 <http://www.aerzteblatt.de/archiv/36332/Kardiovaskulaere-Manifestationsformen-der-Lyme-Borreliose-Therapeutische-Situation-im-chronischen-Stadium-problematisch>
- Karaday B, Spieker E, Schwitter J (2004) Lyme carditis: restitutio ad integrum documented by cardiac MRI. Cardiol Rev 12, 185 [CrossRef](#)
- Seslar SP, Berul CI, Burklow TR, Cecchin F, Alexander ME (2006) Transient prolonged corrected QT intervall in Lyme disease. J Pediatr 148, 692–7 [CrossRef](#) [MEDLINE](#)
- Munk PS, Ors S, Larsen AI (2007) Lyme carditis persistent local delayed enhancement by cardiac magnetic resonance imaging. Int J Cardiol 115, e108–10 [CrossRef](#) [MEDLINE](#)
- Lelovas, P., Dontas, I., Bassiakou, E. and Xanthos, T. (2008) Cardiac Implications of Lyme Disease, Diagnosis and Therapeutic Approach. International Journal of Cardiology, **129**, 15-21. <http://dx.doi.org/10.1016/j.ijcard.2008.01.044>
- Tavora F, Burke A, Li L, Franks TJ, Virmani R (2008) Postmortem confirmation of Lyme carditis with polymerase chain reaction. Cardiovasc Pathol 17, 103–7 [CrossRef](#) [MEDLINE](#)
- (2008) [Lyme Carditis](#)  [PDF - 14 pages] Reprinted from Infectious Disease Clinics of North America, Vol. 22/Ed. 2, Fish AE, Pride YB, Pinto DS, Lyme carditis, 275-288, Copyright 2008, with permission from Elsevier. <http://www.cdc.gov/lyme/resources/Fish2008-508.pdf>
- Berger RE, McGillicuddy DC (2009) Lyme carditis. Intern Emerg Med. 4(5), 419-21. doi: 10.1007/s11739-009-0285-9. Epub 2009 Jul 21. <http://www.ncbi.nlm.nih.gov/m/pubmed/19626420/?i=93&from=%28Heart%20OR%20cardiac%29%20AND%20%28Lyme%20OR%20Borrelia>
- Earl TJ (2010) Cardiac manifestations of Lyme disease. Med Health R I. 93(11), 339-41. <http://rimed.org/medhealthri/2010-11/2010-11-339.pdf>
- Wagner V, Zima E, Gellér L, Merkely B (2010) Acute atrioventricular block in chronic Lyme disease. Orv Hetil. 151(39), 1585-90. doi: 10.1556/OH.2010.28965. Article in Hungarian. <http://www.ncbi.nlm.nih.gov/pubmed/20840915>
- Dolbec KW, Higgins GL, Saucier JR (2010) Lyme carditis with transient complete heart block. West J Emerg Med. 11(2), 211-2. PMID 20823977 [PubMed] PMCID PMC2908662 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2908662/>
- Semmler D, Blank R, Rupprecht H (2010) Complete AV block in Lyme carditis: an important differential diagnosis. Clin Res Cardiol. 99(8), 519-26. doi: 10.1007/s00392-010-0152-8. <http://www.ncbi.nlm.nih.gov/pubmed/20464556>

Palecek T, Kuchynka P, Hulinska D, Schramlova J, Hrbackova H, Vitkova I, Simek S, Horak J, Louch WE, Linhart A (2010) Presence of *Borrelia burgdorferi* in endomyocardial biopsies in patients with new-onset unexplained dilated cardiomyopathy. *Med Microbiol Immunol.* 199(2), 139-43. doi: 10.1007/s00430-009-0141-6. Epub 2010 Jan 6. <http://www.ncbi.nlm.nih.gov/pubmed/20052487>

Bacino L, Gazzarata M, Siri G, Cordone S, Bellotti P (2011) Complete atrioventricular block as the first clinical manifestation of a tick bite (Lyme disease). *G Ital Cardiol (Rome).* 12(3), 214-6. <http://www.ncbi.nlm.nih.gov/pubmed/21560478>

Kugeler KJ, Griffith KS, Gould LH, et al. (2011) A review of death certificates listing lyme disease as a cause of death in the United States. *Clin Inf Dis* 52, 364–7 [CrossRef](#) [MEDLINE](#)

Panic G, Stanulovic V, Popov T (2011) Atrio-ventricular block as the first presentation of disseminated Lyme disease. *Int J Cardiol.* 150(3), e104-6. doi: 10.1016/j.ijcard.2010.02.061. Epub 2010 Mar 11. <http://www.ncbi.nlm.nih.gov/m/pubmed/20226549/?i=84&from=%28Heart%20OR%20cardiac%29%20AND%20%28Lyme%20OR%20Borreli>

Hidri N, Barraud O, de Martino S, Garnier F, Paraf F, Martin C, Sekkal S, Laskar M, Jaulhac B, Ploy MC (2012) Lyme endocarditis. *Clin Microbiol Infect.* 18(12), E531-2. doi: 10.1111/1469-0691.12016. <http://www.ncbi.nlm.nih.gov/m/pubmed/23043635/?i=38&from=%28Heart%20OR%20cardiac%29%20AND%20%28Lyme%20OR%20Borreli>

Piccirillo BJ, Pride YB (2012) Reading between the Lyme: is *Borrelia burgdorferi* a cause of dilated cardiomyopathy? The debate continues. *Eur J Heart Fail.* 14(6), 567-8. doi: 10.1093/eurjhf/hfs047. http://www.researchgate.net/publication/224006038_Reading_between_the_Lyme_is_Borrelia_burgdorferi_a_cause_of_dilated_cardiomyopathy_The_debate_continues

Koene R, Boulware DR, Kemperman M, Konety SH, Groth M, Jessurun J, Eckman PM (2012) Acute heart failure from lyme carditis. *Circ Heart Fail.* 5(2), e24-6. doi: 10.1161/CIRCHEARTFAILURE.111.965533. <http://circheartfailure.ahajournals.org/content/5/2/e24.extract>

Kubánek M, Šramko M, Berenová D, Hulínská D, Hrbáčková H, Malušková J, Lodererová A, Málek I, Kautzner J (2012) Detection of *Borrelia burgdorferi* sensu lato in endomyocardial biopsy specimens in individuals with recent-onset dilated cardiomyopathy. *Eur J Heart Fail.* 14(6), 588-96. doi: 10.1093/eurjhf/hfs027. Epub 2012 Feb 29. <http://www.ncbi.nlm.nih.gov/m/pubmed/22379178/?i=48&from=%28Heart%20OR%20cardiac%29%20AND%20%28Lyme%20OR%20Borreli>

Maher B, Murday D, Harden SP (2012) Cardiac MRI of Lyme disease myocarditis. *Heart.* 98(3), 264. doi: 10.1136/heartjnl-2011-301070. Epub 2011 Nov 14. <http://heart.bmj.com/content/98/3/264.extract>

Centers for Disease Control and Prevention (CDC) (2013) Three sudden cardiac deaths associated with Lyme carditis - United States, November 2012-July 2013. *MMWR Morb Mortal Wkly Rep.* 62(49), 993-6. <http://www.ncbi.nlm.nih.gov/m/pubmed/24336130/?i=15&from=%28Heart%20OR%20cardiac%29%20AND%20%28Lyme%20OR%20Borreli>

[Plocarová K](#) (2013) Inflammatory borrelia - associated dilated cardiomyopathy. *Vnitr Lek.* 59(12), 107-10. [Article in Czech] <http://www.ncbi.nlm.nih.gov/pubmed/24350941>

Ryan MF, Thorn C (2013) Lyme carditis in an immunocompromised patient. *Case Rep Emerg Med.* 2013, 380734. doi: 10.1155/2013/380734. Epub 2013 Aug 1. <http://www.ncbi.nlm.nih.gov/m/pubmed/24083037/?i=17&from=%28Heart%20OR%20cardiac%29%20AND%20%28Lyme%20OR%20Borreli>

Chauhan V, Chauhan N, Chauhan CG, Vaid M (2013) A young healthy male with syncope and complete heart block. *Scott Med J.* 58(2), e13-7. doi: 10.1177/0036933013482661. <http://www.ncbi.nlm.nih.gov/m/pubmed/23728764/?i=23&from=%28Heart%20OR%20cardiac%29%20AND%20%28Lyme%20OR%20Borreli>

Konopka M, Kuch M, Braksator W, et al. (2013) Unclassified cardiomyopathy or Lyme carditis ? A three year follow-up. *Kardiol Pol* 71, 283–5 [CrossRef](#) [MEDLINE](#)

Karmacharya P, Aryal MR (2013) Heart stopping tick. *World J Cardiol*. 5(5), 148-50. doi: 10.4330/wjc.v5.i5.148.

<http://www.ncbi.nlm.nih.gov/m/pubmed/23710302/?i=24&from=%28Heart%20OR%20cardiac%29%20AND%20%28Lyme%20OR%20Borreli>

Krause PJ, Bockenstedt LK (2013) Cardiology patient pages. Lyme disease and the heart. *Circulation*. 127(7), e451-4. doi: 10.1161/CIRCULATIONAHA.112.101485.

<http://circ.ahajournals.org/content/127/7/e451.full>

Deresinski S (2014) Sudden unexpected cardiac death from Lyme disease. *J Infect Dis* 33, 37–9.

[Fabian J. Brunner](#), [Stefan Blankenberg](#), [Karsten Sydow](#) (2014) Digital camera revealed infection with *Borrelia burgdorferi* as a cause of reversible total AV block in a 42 year old man. *International Journal of Cardiology*. DOI: <http://dx.doi.org/10.1016/j.ijcard.2014.08.139>

<http://www.internationaljournalofcardiology.com/article/S0167-5273%2814%2901686-6/abstract>

Puri BK, Shah M, Monro JA, Kingston MC, Julu PO (2014) Respiratory modulation of cardiac vagal tone in Lyme disease. *World J Cardiol*. 6(6), 502-6. doi: 10.4330/wjc.v6.i6.502.

<http://www.ncbi.nlm.nih.gov/m/pubmed/24976922/?i=4&from=%28Heart%20OR%20cardiac%29%20AND%20%28Lyme%20OR%20Borreli>

CONCLUSION: Respiratory modulation of cardiac vagal tone is impaired in Lyme disease, which suggests that Lyme disease may directly affect the vagus nerve or the brainstem.

Hegerova LT, Olson TC (2014) The ticking heart: a case and review of acute Lyme cardiac complications. *Minn Med*. 97(5), 42.

<http://www.ncbi.nlm.nih.gov/m/pubmed/24941591/?i=7&from=%28Heart%20OR%20cardiac%29%20AND%20%28Lyme%20OR%20Borreli>

Karatolios K, Maisch B, Pankuweit S (2014) Suspected inflammatory cardiomyopathy : Prevalence of *Borrelia burgdorferi* in endomyocardial biopsies with positive serological evidence. *Herz*.

<http://www.ncbi.nlm.nih.gov/m/pubmed/24938220/?i=8&from=%28Heart%20OR%20cardiac%29%20AND%20%28Lyme%20OR%20Borreli>

Forrester JD, Mead P (2014) Third-Degree Heart Block Associated With Lyme Carditis: Review of Published Cases. *Clin Infect Dis*. pii: ciu411.

<http://www.ncbi.nlm.nih.gov/m/pubmed/24879781/?i=9&from=%28Heart%20OR%20cardiac%29%20AND%20%28Lyme%20OR%20Borreli>

Mannava K, Grabinski ZG, Mousa O (2014) Putting Heart Block Back in the „Lyme Light“. *Journal of Cardiology Cases*.

<http://www.journalofcardiologycases.com/article/S1878-5409%2814%2900132-7/abstract>

<Learning objective: Although uncommon, Lyme carditis may present without any other classic signs or symptoms of Lyme disease. It should be considered in any patient who presents with new-onset atrioventricular heart block and a history of living in an endemic area. Prompt initiation of empiric antibiotic therapy can be both diagnostic and therapeutic.>

Forrester JD (2014) Recognizing Lyme Carditis. [CDC Expert Commentary](#)

<http://www.medscape.com/viewarticle/818773>

Rojas-Marte G, Chadha S, Topi B, Hollander G, Shani J (2014) Heart block and Lyme carditis. *QJM*. 107(9), 771-2. doi: 10.1093/qjmed/hcu021. Epub 2014 Jan 27.

<http://www.ncbi.nlm.nih.gov/m/pubmed/24472735/?i=14&from=%28Heart%20OR%20cardiac%29%20AND%20%28Lyme%20OR%20Borreli>

Shenthar J, Shetty SB, Krishnamurthy D (2014) Diagnosis not to be missed: Lyme carditis, rare but reversible cause of complete atrioventricular block. *Science direct*. doi:10.1016/j.ihj.2014.11.004

« We present a 43-year-old male who presented with complete heart block and also ill-sustained ventricular tachycardia due to Lyme carditis that reversed completely with antibiotic therapy. »

[Błaut-Jurkowska J, Olszowska M, Kaźnica-Wiatr M, Podolec P](#) (2015) Lyme carditis. [Pol Merkur Lekarski](#). 39(230), 111-5 [Article in Polish] <http://www.ncbi.nlm.nih.gov/pubmed/26319387>
[Similar articles](#)

CDC (2015) What you need to know about Lyme carditis.
http://www.cdc.gov/lyme/signs_symptoms/lymecarditis.html

UpToDate (2015) Lyme Carditis. <http://www.uptodate.com/contents/lyme-carditis>

Noyes AM, Kluger J (2015) A Tale of Two Syndromes: Lyme Disease Preceding Postural Orthostatic Tachycardia Syndrome. *Ann Noninvasive Electrocardiol* 20(1), 82-86
<http://www.ncbi.nlm.nih.gov/pubmed/24830783>

«We report a short series of two women who present with persistent symptoms of orthostatic intolerance consistent with POTS after treated Lyme disease. «

Scheffold N, Herkommer B, Kandolf R, May AE (2015) **Lyme carditis—diagnosis, treatment and prognosis**. *Dtsch Arztebl Int* 2015; 112: 202–8. DOI: 10.3238/arztebl.2015.0202
<http://www.aerzteblatt.de/archiv/168828/Diagnostik-Therapie-und-Prognose-der-Lyme-Karditis>
<http://www.aerzteblatt.de/pdf/112/12/m202.pdf>

Yoon E, Vail E, Kleinmann G et al. (2015) **Lyme disease: A case report of a 17-year old male with fatal Lyme carditis**. *Cardiovascular Pathology*.
<http://www.cardiovascularpathology.com/article/S1054-8807%2815%2900025-3/abstract>
<http://www.lymeneturope.org/forum/viewtopic.php?f=5&t=5727>

[Kuchynka P, Palecek T, Grus T, Schramlova J](#) et al. (2015) **A high frequency of viral agents yet absence of *Borrelia burgdorferi* is seen within the myocardium of subjects with normal left ventricular systolic function: an electron microscopy study**. *Folia Microbiol (Praha)*. [Epub ahead of print] <http://www.ncbi.nlm.nih.gov/pubmed/26205424>

[Muehlenbachs A, Bollweg BC, Schulz TJ](#) et al. (2016) **Cardiac Tropism of *Borrelia burgdorferi*: An Autopsy Study of Sudden Cardiac Death Associated with Lyme Carditis**. *Am J Pathol*. pii: S0002-9440(16)00099-7. doi: 10.1016/j.ajpath.2015.12.027. [Epub ahead of print]
<http://www.ncbi.nlm.nih.gov/pubmed/26968341>

[Kostić T, Momčilović S, Perišić ZD](#) et al. (2016) **Manifestations of Lyme carditis**. *International journal of cardiology*. <http://dx.doi.org/10.1016/j.ijcard.2016.12.169>
[http://www.internationaljournalofcardiology.com/article/S0167-5273\(16\)34820-3/abstract](http://www.internationaljournalofcardiology.com/article/S0167-5273(16)34820-3/abstract)

[Fuster LS, Gul EE, Baranchuk A](#) (2017) **Electrocardiographic progression of acute Lyme disease**. *Science Direct*. DOI: <http://dx.doi.org/10.1016/j.ajem.2017.02.052>
[http://www.ajemjournal.com/article/S0735-6757\(17\)30165-1/abstract?cc=y=](http://www.ajemjournal.com/article/S0735-6757(17)30165-1/abstract?cc=y=)

De l'Étoile-Morel S, Feteih A, Hogan CA, Vinh D, Thanassoulis G (2017) **A Case of Reversible Complete Heart Block**. *Am J Med*. pii: S0002-9343(17)30247-4. doi: 10.1016/j.amjmed.2017.02.022. [Epub ahead of print]. [Similar articles](#)

Tracy KE, Baumgarth N. (2017) ***Borrelia burgdorferi* Manipulates Innate and Adaptive Immunity to Establish Persistence in Rodent Reservoir Hosts**. *Front Immunol*. 8, 116. doi: 10.3389/fimmu.2017.00116. eCollection 2017 Feb 20. Review. PMID: 28265270 [PubMed - in process] [Free PMC Article](#) [Similar articles](#)

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