

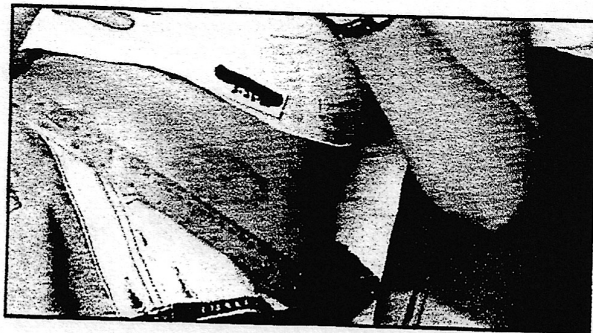
Erythema Migrans—My Point of View

Edwin J. Masters, MD

There is an old saying that says "Wherever I take my eyes, I see things from my point of view." Here is my point of view as a primary care physician in a CDC designated nonendemic area for Lyme disease related erythema migrans (EM).

I have been studying erythema migrans in the lower midwest since 1988.¹⁻¹¹ On one occasion I saw three EMs in one day, but never four—that is until May 26, 2000. Four cases are presented, all evaluated in a single day. There were 3 other EMs at our clinic earlier in that week. None had recent tick exposure in Lyme disease endemic areas. Over the past dozen years, I have evaluated between 20 and 35 EMs per year. Lyme disease in the lower Midwest and South is still controversial and most physicians do not report it.

Case #1 T.L.

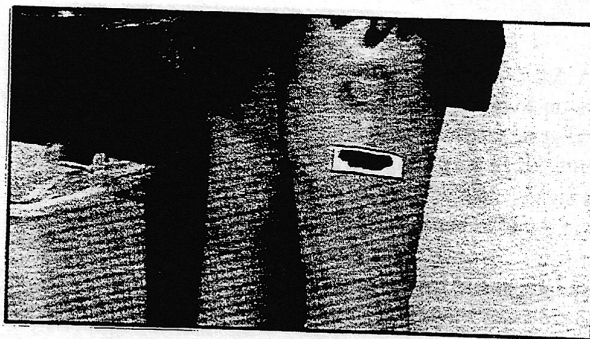


A 42-year-old female removed a nymphal-sized tick from the left side of her abdomen 2 weeks previously. The rash started 1 week ago and has enlarged to its current size of 7 × 12 cm. She averages 3 tick bites per year and has never had such a reaction.

From Regional Primary Care, Inc., Cape Girardeau, Missouri.

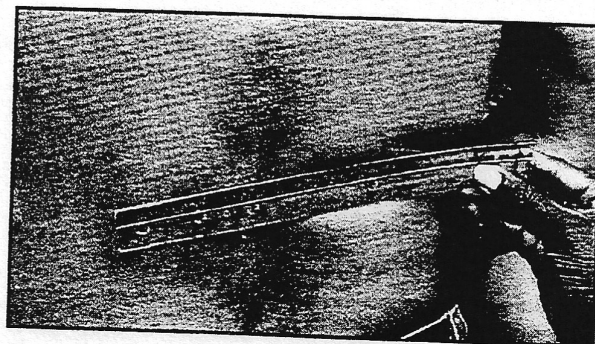
Address correspondence to Edwin J. Masters, MD, Regional Primary Care, Inc., #69 Doctors' Park, Cape Girardeau, MO 63703.

Case #2 D.E.



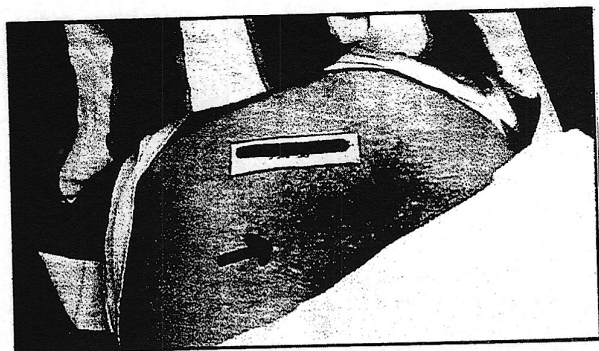
A 48-year-old female with a large tick exposure from gardening had an enlarging annular rash with a visible punctum. She has had no prior similar appearing rash. The annular erythema with central clearing was 7 cm in diameter. Additional complaints included dizziness, fatigue, and mild sore throat for 2 days.

Case #3 T.D.



A 43-year-old male removed an adult tick from his back 10 days previously at the site of the current rash, which was noticed the day before. He never previously had a rash following a tick bite. The rash was 6 × 9 cm with central clearing.

Case #4 J.L.



A 54-year-old male removed two imbedded nymph ticks on May 15 and May 18, which were obtained while walking near his pond. Only the tick bite in the groin area resulted in a spreading erythematous rash. The punctum was still visible. The 8×8 cm rash was partially obscured in the photo because of the hair. Previously, he never had a rash following a tick bite. Additional complaints included fatigue and myalgias for 4 days.

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Epidemiologic and Diagnostic Studies of Patients with Suspected Early Lyme Disease, Missouri, 1990–1993

To the Editor—Campbell et al. [1] conclude that tick bite–associated annular rashes in Missouri are not caused by any *Borrelia burgdorferi* or related spirochete. As the state epidemiologist who initiated that study and the primary clinician who supplied over half of the patients, readers should be informed that we declined authorship because of decisions to exclude data relevant to the objective evaluation of the problem and other decisions about content and conclusions.

Missouri erythema migrans (EM) rashes are visibly indistinguishable from those associated with Lyme disease elsewhere and Missouri case data showing EM incidence with a summer peak, rash location on the body, histology, treatment response, incubation time, tick exposure, age, gender, multiple lesions, associated signs and symptoms, and sequelae are all similar to Lyme disease reported nationally. In this study, 3 EM patients, even with treatment, had arthritis at 2.5 months and 4.5 months and a documented carditis at 24 days, respectively [2]. If Lyme disease is a clinical diagnosis, as the world's literature and the Centers for Disease Control and Prevention (CDC) state, then this is clinical Lyme disease. If this syndrome is caused in whole or in part by a new *Borrelia*, then one ponders the question "Is it or is it not Lyme disease, if it cannot be distinguished clinically?" Relapsing fever is caused by several *Borrelia*, both tick-borne and louse-borne, and Cadavid et al. [3] published "The *Borrelia turicatae* Mouse Model of Lyme Disease."

Study patients were selected by Campbell et al. and even their own tests were selectively reported. For example, eight CDC ELISAs on patient 6 were done and none was negative. The Western blots were indeed negative by Dressler's criteria but positive by other published criteria [4, 5]. Excluding this information, along with disregarding later positive IgM responses [6], may be inappropriate, especially when asserting no evidence exists. Additionally, there were positive biopsies that showed apparent dermal spirochetes. Missouri EM incubation time data were excluded, whereas other data not in the study were included. Also excluded was the numerical delineation of the weaker, but definite, bands on the Western blots [2], even when the CDC has described their diagnostic utility [7]. We know that atypical *B. burgdorferi* exist in Missouri that are geographically and temporally associated with clinical Lyme disease [8] and that strain-dependent differences of Western blot band intensities exist [9]. Forty of the 45 patients in this study had a total of 57 different positive Lyme serologies performed by seven different laboratories. Control data on 38 Missouri patients with the CDC's whole cell sonicate (WCS) ELISA, but not the flagella (FLA) ELISA, were obtained. The discordant results with the positive tests were such that the odds of this occurring by chance were 1 in 25 million. Furthermore, if one

Table 1. Lyme disease Western blot bands: a comparison of 21 Missouri case study EM patients' *Borrelia*-associated bands when tested by the CDC with published normal non-Lyme controls [2].

kDa	Missouri EM (n = 21)		Ma controls* (n = 320)		P
	No.	%	No.	%	
20	2	9.5	2	0.6	<.001
31	3	14	7	2.2	<.002
34	6	28	8	2.5	<.001
39	7	33	4	1.3	<.001
41	21	100	138	43	<.001
66	11	52	42	13	<.001
83	8	38	4	1.3	<.001

NOTE. Reprinted with permission of the Missouri State Medical Association.
* Reference [10].

takes the 21 patients who had both IgM and IgG Western blots and compares them to the published study by Ma et al. [10], in which weaker but definite bands were included, the results are meaningful (table 1).

Fawcett et al. [5] published a series of 200 non-Lyme controls and only one had four IgG bands. The majority of these Missouri EM patients had four or more IgG bands. Eight of the 11 patients in which there were positive CDC WCS ELISAs and negative results with the less-sensitive FLA ELISAs were part of a national prospective study in which Lyme serologies were done. All 8 (100%) of this subgroup had one or more ELISAs at least 2 SD from normal, with many having strongly positive tests. Extensive testing for cross-reactivity was negative. We disagree with the Campbell et al. [1] conclusion that evidence implicating *B. burgdorferi* or a related spirochete is absent. Atypical *B. burgdorferi* or "related spirochetes" are completely compatible with the available data. Absence of proof is not proof of absence.

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