



# EPIDEMIOLOGY BULLETIN

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## LYME DISEASE IN VIRGINIA?

Lyme disease, named after Lyme Connecticut, where the disease was first observed, has not been previously reported in Virginia. The patient described below is the first suspected autochthonous case reported to the Division of Epidemiology.

Case report. A 19 year old white male presented to his private physician in June, 1981, complaining of a 3 day history of a slightly irritated area on the back of his head. Two days before the onset of his illness, he had removed a tick from that same area. He was surprised to find that the tick was slightly engorged, because he had been checking himself daily for ticks. The tick was smaller and slightly darker than ticks he had removed previously. His occupation involved working with tick-infested farm animals. There was no history of travel in the preceding 6 weeks. Examination revealed only a 2-3 cm area of warm erythematous induration of the posterior scalp, and a tender posterior cervical node on the same side. Therapy was initiated with oral doxycycline, 100 mg twice a day for the first day, and once daily thereafter.

He returned 2 days later complaining of severe malaise, slight neck pain, headache, myalgias, arthralgias, and nausea. He had felt feverish earlier that day. On examination, he appeared slightly toxic, but vital signs were normal. The previous area of erythema had cleared, but expanding outward in a concentric fashion was a 6 cm ring of erythema with a purplish hue. The remainder of the exam was unremarkable. Results of the following tests were normal: complete blood count (CBC) with differential, erythrocyte sedimentation rate (ESR), immunoglobulin electrophoresis, immune complex by Clq, cryoglobulins, and electrocardiogram. The doxycycline dose was increased to 100 mg twice a day and continued to complete a ten day course.

Systemic symptoms resolved over the next 36 hours. The skin lesion, however, had increased to 8 cm in diameter by the 8th day of illness. Eventually, by the 19th day after onset of illness, this lesion had also resolved. He was observed for the development of cardiac, neurologic, or arthritic sequelae, but after one year of follow-up, none has been noted. Sera were submitted for indirect immunofluore-

science antibody testing against tick spirochete antigen (1), but no rise in antibody titer was detected. (Submitted by J.W. Kerns, M.D., Front Royal, VA).

Editor's comment: This patient's illness clearly matches the descriptions of erythema chronicum migrans (ECM) noted in patient's with Lyme disease. Although the serologic test failed to support the diagnosis, this is still an experimental procedure of unknown sensitivity and specificity. Furthermore, the effect of early antimicrobial therapy on subsequent antibody response in this disease is still unknown. The following general description of Lyme disease was submitted by G. Schmid, M.D. from the Centers for Disease Control (CDC).

Lyme disease is an illness recently described in the United States and is named after Lyme, Connecticut, where the illness was first studied in 1975. The disease has subsequently been recognized in at least 13 additional states. Cases have been primarily reported from three geographic areas: the east (Connecticut, Massachusetts, Rhode Island, New York, New Jersey, Pennsylvania, Maryland, Georgia), the midwest (Wisconsin, Minnesota), and the west (Oregon, California, Nevada); a case has also been reported in Arkansas. As awareness of the disease increases, it is likely that additional states will be added to this list.

Lyme disease is a systemic illness characterized by a distinctive primary skin lesion (erythema chronicum migrans--ECM) and, in many cases, subsequent development of significant cardiac, neurologic, and/or arthritic complications. Nonspecific systemic symptoms such as fever, chills, malaise, arthralgia and headache are also usually present.

ECM, the most characteristic feature of the disease, begins as a red macule or papule which expands in a circular manner over a number of days. As the lesion expands, central clearing often occurs. Lesions can reach diameters of 12 inches or more and many people will have multiple skin lesions, generally beginning several days after an initial lesion. With time, the skin lesions fade, lasting a median of 3 weeks.

Days to weeks after the skin lesion appears, cardiac, neurologic or joint manifestations may develop. Not all persons with ECM, however, will develop these complications. The usual cardiac manifestations are atrioventricular conduction defects, although electrocardiographic changes consistent with myocarditis or pericarditis may occur. The most common neurologic manifestations are headache and stiff neck, consistent with meningoencephalitis. Cranial nerve palsies, as well as motor and sensory radiculitis, may also be seen. Both cardiac and neurologic abnormalities tend to be self-limited, although repeated episodes may occur.

The arthritic manifestations, which begin weeks to as long as 2 years (median, 4 weeks) after the appearance of ECM, are characterized by intermittent attacks of acute arthritis, usually of the large joints, with each episode lasting days to several months. About 10% of people with Lyme disease, primarily those with preceding attacks of acute arthritis, subsequently develop chronic arthritis, most commonly in the knee.

Lyme disease is thought to be caused by an infectious agent transmitted by Ixodes ticks, although other vectors could be involved. In Connecticut, about 20% of patients remember a bite by an Ixodes dammini tick 3-30 days prior to the

appearance of ECM at the site. In California and Oregon, I. pacificus ticks have been implicated. Further evidence for an infectious etiology of the disease is that antimicrobial therapy has been shown to significantly alter the course of the disease. Penicillin V or tetracycline, 250 mg, orally, four times a day for 10 days, can successfully treat the early phases of the disease when ECM is present and prevent, or at least ameliorate, the subsequent, more severe cardiac, neurologic or arthritic phases.

Work to identify an agent of the disease and to develop a diagnostic laboratory test is ongoing. Recently, a spirochete was isolated from I. dammini ticks; indirect fluorescent antibody testing of patient sera suggests that this may be the etiologic agent of Lyme disease. At present, however, the diagnosis of Lyme disease rests on clinical grounds. This is based principally on recognition of typical ECM skin lesions in association with cardiac, neurologic, and arthritic abnormalities.

The majority of cases of Lyme disease have onset in the summer months. Because the full geographical distribution and magnitude of numbers of cases of Lyme disease are not known, the Conference of State and Territorial Epidemiologists and the Centers for Disease Control are attempting to identify all cases of Lyme disease occurring this year in the United States. Notification of any case of suspected Lyme disease would be greatly appreciated, and should be reported to the Division of Epidemiology, Virginia State Health Department.

#### SUGGESTED READING

1. Burgdorfer W, Barbour AG, Hayes SF, Benach JL, Grunwaldt E, Davis JP. Lyme disease--a tick-borne spirochetosis? *Science* 1982;216:1317-19.
2. Steere AC, Malawista SE, Hardin JA, Ruddy S, Askenase PW, Andiman WA. Erythema chronicum migrans and Lyme arthritis. *Ann Intern Med* 1977;86(6):685-98.
3. Steere AC, Malawista SE, Newman JH, Spieler PN, Bartenhagen NH. Antibiotic therapy in Lyme disease. *Ann Intern Med* 1980;93(1):1-8.
4. CDC. Lyme disease - United States, 1980. *MMWR* 1981;30:489-97.

September, 1982

MONTH: \_\_\_\_\_

DISEASE	STATE					REGIONS				
	THIS MONTH	LAST MONTH	TOTAL TO DATE		MEAN 5 YEAR TO DATE	THIS MONTH				
			1982	1981		N.W.	N.	S.W.	C.	E.
CHICKENPOX	11	61	814	1610	905.0	0	3	1	1	6
MEASLES	0	1	14	9	1226.6	0	0	0	0	0
MUMPS	0	6	33	122	107.2	0	0	0	0	0
PERTUSSIS	5	3	23	7	11.6	3	1	1	0	0
RUBELLA	0	1	13	6	214.2	0	0	0	0	0
MENINGITIS - ASEPTIC	44	81	152	183	153.6	7	3	11	18	5
BACTERIAL	18	31	154	167	125.8	1	1	4	4	8
ENCEPHALITIS - INFECTIOUS	6	10	28	32	26.8	1	1	1	2	0
POST-INFECTIOUS	0	1	1	3	6.6	0	0	0	0	0
HEPATITIS A (INFECTIOUS)	12	38	137	166	208.4	0	1	1	0	10
B (SERUM)	47	68	369	388	314.2	5	13	7	9	13
SALMONELLOSIS	138	264	1117	1238	864.0	16	19	17	41	45
SHIGELLOSIS	14	60	117	1085	304.6	5	5	0	2	2
TUBERCULOSIS - PULMONARY	31	33	400	404	-	-	-	-	-	-
EXTRA-PULMONARY	9	9	79	81	-	-	-	-	-	-
SYPHILIS (PRIMARY & SECONDARY)	43	49	458	514	420.2	4	3	3	9	24
GONORRHEA	1500	2568	14,822	16,649	17,518.6	-	-	-	-	-
ROCKY MOUNTAIN SPOTTED FEVER	14	39	72	100	103.2	1	1	3	7	2
RABIES IN ANIMALS	71	28	441	94	28.0	9	62	0	0	0
MENINGOCOCCAL INFECTIONS	6	8	55	77	55.2	1	0	2	1	2
INFLUENZA	26	26	340	4924	2612.6	0	0	20	0	6
MALARIA	5	8	33	24	26.8	0	4	0	1	0
OTHER: <i>Hepatitis Unspecified</i>	15	29	85	141	133.4	6	0	0	0	9

COUNTIES REPORTING ANIMAL RABIES: *Prince Wm. 1 groundhog, 1 bat, 1 raccoon; Arlington 1 raccoon; Fairfax 28 raccoons, 1 cat, 1 skunk; Fauquier 1 raccoon, 1 bat; Frederick 2 skunks, 1 cat, 1 raccoon; Loudoun 25 raccoons, 1 groundhog, 1 redfox*

Occupational illnesses: *Occupational pneumoconioses 12; Occupational dermatoses 2; Occupational hearing loss 4; Asbestosis 8; Lead Poisoning 2.*

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