

## Ehrlichiosis in the Southeast Missouri Area

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1992 22 clinical erythema migrans patients are tested by the CDC for exposure to infectious agents. One of the 22 (4.5%) tested IgG positive for *E. chaffeensis*. He had no history of a severe febrile illness.

1992 In July a computerized random telephone survey of people in the Cape Girardeau, MO area revealed that over 20% of the respondents reported an imbedded tick bite in the previous 30 days.

1993 Tick studies showed *E. chaffeensis* to be in 1-3% of Missouri lone star ticks tested by PCR. Positive ticks were found in Bollinger County, adjacent to Cape Girardeau County, in Southeast Missouri. (Anderson BE, Sims KG, Olson JG, et al. *Amblyomma americanum*: A potential vector of human ehrlichiosis. *Am J Trop Hyg* 1993; 49 (2): 239-244.)

1993 Fichtenbaum DJ, Peterson LR and Weil GJ. Ehrlichiosis Presenting as a Life-threatening Illness with Features of the Toxic Shock Syndrome. The *Amer J of Med* 1993;95; 351-357. Nine severely ill patients, including a 6 1/2 year old boy, who died, are published. All nine patients had tick bites or exposure in southeastern Missouri or southwestern Illinois. The 6 1/2 year old received his tick bite at a lake about 40 miles from Cape Girardeau, MO.

1995 I attended the Emerging Zoonosis conference hosted by Dr. Walker in Galveston, Texas and learned more about Ehrlichiosis. Having never made the diagnosis before in over 20 years of practice, within 2 months I accurately diagnosed (confirmed by Dr. Dumler's lab) HME in two severely ill patients who responded well to treatment.

1995 "Ehrlichiosis: An Update with Two case reports" is published by me in the *Cape County Medical Journal* to alert fellow physicians.

1995 A 36-year old biologist, father of two, working in southern Illinois across the Mississippi river from Cape Girardeau, MO. [Cape Girardeau, MO, population < 50,000, is on the Mississippi river and is the only inland cape in North America- thus the name.] dies from Ehrlichiosis. This is reported in the press and the U.S. Forest Service names a natural area in Shawnee National Forest in his memory.

1996 A severely ill 60+ year old lady who became sick following a tick bite is transferred in extremis from an outlying hospital to Cape Girardeau. She dies from an apparent infectious disease. Her Ehrlichia titers come back 2 weeks after her death and are diagnostic ( in the thousands).

1997 Dr. Walker initiates a prospective 3 year Ehrlichiosis study in the Cape Girardeau area. The medical society is informed and educated on the illness.

1998 "Ehrlichial Infections" by Olano J, Masters E, Russell J, and Walker D. is published in the *Cape County Medical Journal* to increase physician awareness of HME.

1998 A footnote on the difficulty of the diagnosis is when a patient of mine, aware of the *Ehrlichia* study and who is a DVM, called and sent blood samples on a dog he had diagnosed with ehrlichiosis. *Rickettsia rickettsii* (RMSF) grew in the cultures. The cultures were done out of curiosity and no *ehrlichia* were grown.

1998 After only two years of the three year study, 22 cases of HME from the Cape Girardeau area are confirmed by Dr. Walker and MRL.

As a primary care physician who has been in private practice in Southeast Missouri since 1974, I did not make a diagnosis of Ehrlichiosis until 1995. "What the mind does not know, the eyes cannot see." Since then I have diagnosed (and had confirmed) sixteen cases from my personal practice and have also been involved in the diagnosis and care of several other physician's cases. The severity of illness has ranged from a mild flu-like illness following a tick bite to the patient being perceived as moribund. Fortunately, none has died and all have had good outcomes with doxycycline therapy. Most were diagnosed and treated as outpatients.

The following facts regarding my experiences are notable.

1. HME is far more prevalent than previously thought. (Sixteen confirmed cases since 1995 from my practice alone.)
2. Diagnosis is proportional to level of awareness or index of suspicion. Physician education is critical.
3. The clinical spectrum of HME is quite broad. Many patients are not severely ill and do not have the triad of thrombocytopenia, leukopenia and elevated liver enzymes upon initial presentation.

4. Early diagnosis and aggressive treatment with doxycycline generally result in excellent outcomes.
5. Many ill patients following tick bites who were thought to have HME, tested negative. The sensitivity of the tests need to be studied as well as other possible tick vectored illnesses that can have overlapping clinical presentations.
6. Co-infection: One confirmed HME patient presented with a 9.5 x 10.5 cm expanding erythematous rash suspicious for erythema migrans following a nymphal tick bite. Another confirmed HME case was also associated with an erythema migrans rash. The EM was published in the Oct 26, 1998, *Archives of Internal Medicine*. The possibility of co-infection in the South, including Missouri, may need to be considered. A new *Babesia, MO 1*, that is genetically similar to *Babesia divergens* has been discovered in Cape Girardeau, MO. (Herwaldt BL, Persing DH, Precigot EA, et al. A Fatal Case of Babesiosis in Missouri: Identification of Another Piroplasm that Infects Humans. *Ann Intern Med* 1996; 124: 643-650.) *Amblyomma americanum* has also been linked to southern erythema migrans lesions. (Masters E, Granter S, Duray P and Cordes P. Physician- Diagnosed Erythema Migrans and Erythema Migrans- like Rashes Following Lone Star Tick Bites. *Arch Dermatol*. 1998; 134: 955-960.) There is a documented northern *Ixodes* deer tick vectored triad of Lyme, HGE and Babesiosis. Similarly, I believe there is a southern lone star tick vectored triad of HME, *Borreliosis* and *Babesia MO 1*. The illnesses are clinically similar, but microbiologically different.
7. One of the confirmed positive HME patients did save the tick. It was an adult female lone star and supports previous data implicating *Amblyomma americanum* as an HME vector.

"The future ain't what it used to be." Yogi Berra