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Accepted for publication Oct 5, 2012

doi:10.1542/peds.2012-1438

Blindness in Walnut Grove: How Did Mary Ingalls Lose Her Sight?

Little Strep on the Prairie

Scarlet fever was once one of the most feared diseases of childhood. Readers familiar with Laura Ingalls Wilder's semi-autobiographical "Little House" series will recall that her sister Mary became blind from the infection. Or did she? This paper explores the actual events behind Mary Ingalls' illness, and in the process opens a window into child health on the American frontier in the late 1800s.

—Jeffrey P. Baker, MD, PhD

Section Editor, Historical Perspectives

"LITTLE SCARLET FEVER ON THE PRAIRIE"

Millions who have read Laura Ingalls Wilder's *Little House* books are familiar with the trials and tribulations of Laura's blind sister Mary. In *By the Shores of Silver Lake*, Laura attributes Mary's blindness to scarlet fever: "Mary and Carrie and baby Grace and Ma had all had scarlet fever. Far worst of all, the fever had settled in Mary's eyes and Mary was blind." (p 1).¹ Herein, we examine the plausibility of scarlet fever as the cause of Mary Ingalls' blindness by systematically analyzing biographical documents, local newspapers, school registries, and epidemiologic data on blindness and infectious disease in the years when Mary and Laura Ingalls were children.

We conclude that Mary's blindness was probably caused not by scarlet fever but by viral meningoencephalitis.

SCARLET FEVER IN THE 19TH CENTURY

Mary Ingalls went blind in 1879 at age 14. Between 1840 and 1883, scarlet fever, caused by *Streptococcus pyogenes*, was one of the most common infectious causes of death among children in the United States.² Case fatality rates ranged from 15% to 30%.² As late as 1910, scarlet fever was cited as one of the top 4 causes of blindness, along with measles, meningitis, and "other diseases of the head."³ For reasons that remain unclear, scarlet fever case fatality rates fell dramatically in the early 20th century, well before antibiotic treatment.^{2,4}

The mechanism for scarlet fever causing permanent blindness is uncertain. It is conceivable that it could be a postinfectious autoimmune phenomenon, such as optic neuritis. However, there are few cases reported, of which most were temporary and some likely misattributed cases of meningitis.⁵ Given scarlet fever epidemiology in late 19th century United States, it is possible that Mary Ingalls could have

contracted scarlet fever and gone blind as a result. However, evidence from newspaper reports of Mary's illness and from Laura Ingalls' memoirs (as opposed to her novels) suggests this is improbable.

FIRSTHAND REPORTS OF MARY'S ILLNESS

The *Little House on the Prairie* series is based on Laura's 1930 unpublished memoir, "Pioneer Girl." Laura mentions scarlet fever in this memoir only in reference to the winter of 1872: "We took the Scarlet Fever. We couldn't go to school nor play our [sic] doors but had to lie in bed and take nasty medicine."⁶ However, Laura's description of Mary's illness in 1879, the year she lost her sight, never mentions scarlet fever. During the 1878 to 1879 winter, Mary "did not go [to Sunday school] in the afternoon, because she was not very well all winter."⁶ Then, in April 1879, Mary was "taken suddenly sick with a pain in her head and grew worse quickly. She was delirious with an awful fever. We feared for several days that she would not get well."⁶

Laura vividly describes the illness: "One morning when I looked at her I saw one side of her face drawn out of shape. Ma

said Mary had had a stroke.”⁶ After the initial stages of illness, Mary’s vision deteriorated. “After the stroke Mary began to get better, but she could not see well...As Mary grew stronger her eyes grew weaker until when she could sit up in the big chair among the pillows, she could hardly see at all.”⁶ The local physician, puzzled by Mary’s blindness, consulted another physician whose assessment was that “the nerves of her eyes had had the worst of the stroke and were dying, that nothing could be done.”⁶ According to Laura, “They had a long name for her sickness and said it was the result of the measles [sic] from which she had never wholly recovered.”⁶ The basis for this diagnosis was likely clinical given that there was limited, if any, diagnostic testing available to differentiate among the various childhood illnesses.

The local newspaper confirms Mary’s illness in its April 14th, 1879 issue: “Miss Mary Ingalls has been confined to her bed about ten days with severe head ache. It was feared that hemorrhage of the brain had set in in [sic] one side of her face became partially paralyzed. She is now slowly convalescing.”⁷ A month later the same paper reported “Miss Mary Ingalls is still confined to her bed, and at times her sufferings are great.”⁸ Unfortunately, while Mary’s facial paralysis resolved and she eventually regained her strength, she never recovered her sight.⁶

Years later, in a letter to her daughter Rose dated March 23, 1937, shortly before the *Shores of the Silver Lake* was published, Laura wrote “Mary had spinal meningitis [sic] some sort of spinal sickness. I am not sure if the Dr. named it. We learned later when Pa took her from De Smet, South Dakota to Chicago, Illinois to a specialist that the nerves of her eyes were paralyzed and there was no hope.”⁹ The pupils’ register of the Iowa College for the Blind, which Mary attended from 1881

to 1889, corroborates Laura’s mention of spinal sickness. The register lists Mary’s cause of blindness as “brain fever,”¹⁰ which was a period term for meningoencephalitis.¹¹

After revisions by Laura and her daughter Rose, Laura’s memoirs were transformed into the *Little House* novels. We presume that during those revisions, they decided to attribute Mary’s blindness to scarlet fever,¹² perhaps to make the story understandable for children. Alternatively, Laura’s editors may have thought readers were more familiar with scarlet fever than brain fever or meningoencephalitis. For example, scarlet fever is featured prominently in other 19th century novels such as *Frankenstein* and *Little Women*.

SO WHY DID MARY GO BLIND?

Meningoencephalitis is the most likely cause of Mary’s illness and subsequent blindness. It explains not only her fever and headache, but also Mary’s “stroke” from direct infection or postinfectious inflammation of the facial nerve that left one side of her face paralyzed. A real stroke seems unlikely, because no other area of the body is reportedly paralyzed. Most importantly, meningoencephalitis could cause bilateral optic neuritis through direct inflammation of the optic nerve that would result in a slow and progressive loss of sight. Dr Jacob Welcome, a physician from the nearby town of Sleepy Eye, MN, was called in to assist the local physician and described the nerves of Mary’s eyes as “dying,” suggesting that he performed an ophthalmoscopic exam. The absence of anterior segment findings rules out ulcerative keratitis and anterior necrotizing scleritis.¹³ Also, based on Laura’s report that Mary’s “blue eyes were still beautiful...”,¹ (ie, no noticeable abnormalities), pan-ophthalmic or orbital processes such as endophthalmitis or orbital cellulitis are implausible.

What kind of meningoencephalitis? Bacterial meningoencephalitis, although possible, is unlikely. Many individuals who survived bacterial meningoencephalitis in the pre-antibiotic era suffered significant cognitive impairment. In contrast, Mary’s teachers judged her “very smart” and she consistently scored As,¹⁰ making viral meningoencephalitis more probable. Based on Mary’s age and the season, possibilities include arboviruses (1878 was one of the most temperate years recorded at a St. Paul station, with the annual mean temperature at nearly 49°F),¹⁴ enteroviruses, herpes simplex, and Epstein-Barr.

Of note, the physicians’ attribution of Mary’s blindness to measles that had not fully resolved is improbable. Mary had contracted measles 2 years earlier.⁶ Although in rare cases measles can remain dormant after recovery from acute primary illness and later develop into subacute sclerosing panencephalitis,¹⁵ this leads to progressive neurologic deterioration and death. In contrast, Mary died in 1928 at the age of 63.

CONCLUSIONS

Although scarlet fever does not seem to be the cause of Mary Ingalls’ blindness, the historical virulence of scarlet fever and its impact on 19th century childhood health should not be overlooked. Mary’s story illustrates how tales of disease are woven into our culture, reinforced by recollections of a 19th century scourge on children. On the basis of clinical manifestations and firsthand accounts of Mary’s illness, we believe her blindness resulted from viral meningoencephalitis rather than scarlet fever.

ACKNOWLEDGMENTS

We thank Dr Margie Andreae, Clinical Professor of Pediatrics (University of Michigan), and Dr Andrea Cruz

(Baylor College of Medicine–Pediatric Emergency Medicine and Infectious Disease) for thoughtful review of the manuscript. We are grateful to Dr Michelle Macy for her enthusiastic encouragement and support. Dr Tarini thanks Dr Jane Curtis for her encouragement of Dr. Tarini's initial interest in this topic. We also thank Spencer Howard from the Herbert Hoover Presidential Library and Museum (West Branch, IA) for assisting with the search for Laura's memoirs. We extend our gratitude to Bill Anderson for his expertise as an Ingalls family historian and additional thanks to the South Dakota Historical Society.

REFERENCES

1. Wilder LI, Sewell H, Boyle M. *By the Shores of Silver Lake*. New York, NY: Harper & Brothers; 1939
2. Katz AR, Morens DM. Severe streptococcal infections in historical perspective. *Clin Infect Dis*. 1992;14(1):298–307
3. US Bureau of the Census. *The Blind Population of the United States, 1910*. Washington, DC: G.P.O.; 1915
4. US Bureau of the Census. *Historical Statistics of the United States: Colonial Times to 1970*. Washington, DC: US Department of Commerce, Bureau of the Census; 1975
5. Turnbull CS, Gould GM. Diseases of the eye. In: Keating JM, ed. *Cyclopædia of the Diseases of Children Medical and Surgical*. Vol IV. Philadelphia, PA: J.B. Lippincott; 1890
6. Wilder LI. "Folder 19." Laura Ingalls Wilder, Papers, 1894-1943 (C3633). (Unpublished). Located at: Western Historical Manuscript Collection (Microfilm), Mansfield: Laura Ingalls Wilder Home Association
7. Walnut Station Items. *The Redwood Gazette*. April 24, 1879
8. Walnut Station Items. *The Redwood Gazette*. May 15, 1879
9. Wilder LI, Lane RW. Correspondence. *Rose Wilder Lane Papers–Laura Ingalls Wilder Series*. Unpublished. West Branch, IA: Herbert Hoover Presidential Library-Museum; March 23, 1937
10. Register of the Pupils of the Iowa College for the Blind. Entry 437. *Iowa Braille School*. Vinton, IA; 1881–1882
11. Peterson AC. Brain fever in 19th century literature: fact and fiction. *Vic Stud*. 1976;19(4):445–464
12. Wilder LI. Pioneer Girl "Copy sent Bye". *Laura Ingalls Wilder Papers 1894-1943 (C3633) (Unpublished)*. Western Historical Manuscript Collection. West Branch, IA: Herbert Hoover Presidential Library-Museum; 1930
13. Papageorgiou KI, Ioannidis AS, Andreou PS, Sinha AJ. Optic atrophy, necrotizing anterior scleritis and keratitis presenting in association with streptococcal toxic shock syndrome: a case report. *J Med Case Reports*. 2008;2:69
14. Fisk C. Graphical climatology of Minneapolis-St. Paul area temperatures, precipitation, and snowfall (1820–present). Available at: www.climatestations.com/minneapolis/. Accessed April 12, 2012
15. Gutierrez J, Issacson RS, Koppel BS. Subacute sclerosing panencephalitis: an update. *Dev Med Child Neurol*. 2010;52(10):901–907

FINANCIAL DISCLOSURE: The authors have indicated they have no financial relationships relevant to this article to disclose.

FUNDING: Dr Tarini is supported by a K23 Mentored Patient-Oriented Research Career Development Award from the National Institute for Child Health and Human Development (K23HD057994). Dr Byington is supported by the National Center for Research Resources and the National Center for Advancing Translational Sciences, National Institutes of Health, through Grant 8UL1TR000105 (formerly UL1RR025764) and the HA and Edna Benning Society.

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Pediatrics; originally published online February 4, 2013;
DOI: 10.1542/peds.2012-1438

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DOI: 10.1542/peds.2012-1438

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