Mississippi State Department of Health

Mississippi Morbidity Report

Volume 30, Number 5 September 2014

Hansen's Disease (Leprosy) in Mississippi

Key Messages:

- **Hansen's disease, though rare, is endemic in Mississippi and may be associated with exposure to armadillos.**
- **Medical providers should suspect Hansen's disease in patients with persistent skin lesions, particularly if associated with localized loss of sensation or exposure to armadillos**.

Background: Leprosy, also known as Hansen's disease, is a chronic infectious disease of the skin and peripheral nerves caused by the bacteria *Mycobacterium leprae* (*M. leprae).* The infection, with an average incubation period between 8 and 12 years, is seen mainly in poor countries and rarely seen in developed nations. In the United States, 213 new cases of leprosy were reported in 2009 [1]. Approximately 75 percent of these reported cases occurred among immigrants. However, endemic acquisition foci exist in parts of the south-central U.S., primarily in Louisiana, Mississippi, Florida, and Texas [1].

Pathogenesis and Clinical Presentation: Hansen's disease is caused by the slowly growing acid-fast bacillus *M. leprae*. Infection with *M. leprae* can result in a broad spectrum of clinical presentations dependant on the degree of the human immune response. A more robust response is associated with pauci-bacillary (or tuberculoid) disease, commonly presenting with few, well defined lesions (hypo-pigmented, erythematous or scaly) associated with focal loss of sensation. Multi-bacillary (or lepromatous) disease results from a weaker immune response and is associated with a higher bacterial burden. Findings of multi-bacillary disease include: erythematous macules, papules and nodules; hair loss, especially of the eye brows and lashes; and in severe cases nasal septal perforation and "saddle nose" deformities. A spectrum of disease severity occurs between these two extremes. Depending on the varying manifestations they are classified as: tuberculoid, borderline tuberculoid, mid-borderline, borderline lepromatous, or lepromatous. Neuropathy and neuronal invasion are common in all forms; the resulting manifestations are more severe in those with the multi-bacillary forms of disease.

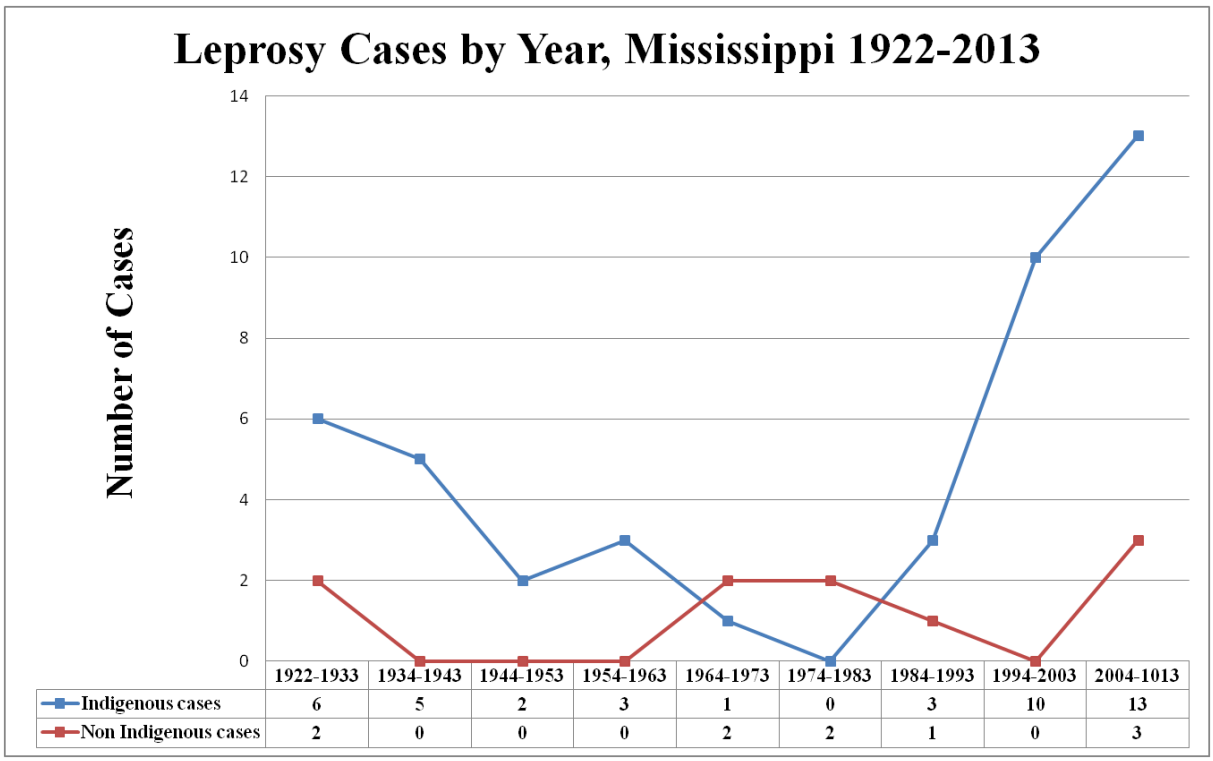
Transmission: Although the mode of transmission of *M. leprae* has not been proven, person-to-person aerosol spread from infected nasal secretions is posited in most cases worldwide. However, there is increasing evidence that a very small number of cases may be classified as zoonotic infections in countries where nine-banded armadillos (*Dasypus novemcinctus*) are found in the wild. As the wild nine-banded armadillos are the only identified species in the U.S. that can serve as a reservoir for *M. leprae* in nature and has a range that includes the Southeastern U.S., it has been postulated that they may be spreading the bacteria into the environment and transmitting infection to humans in the U.S. south [2]. Human indigenous leprosy cases have been described in the same geographic regions where infected armadillos have been reported, mainly Texas and Louisiana and Mississippi [3].

Diagnosis: Full thickness skin biopsies from the margins of the most active lesions or biopsies of other lesions, with AFB staining and PCR testing for *M. leprae* DNA, are effective sampling approaches for diagnosing Hansen's disease. Bacterial culture for *M. leprae* from clinical specimens is not available. **Hansen's disease is Class III Reportable Condition in Mississippi, requiring notification to MSDH by laboratories within 1 week of confirmation of the diagnoses.**

Treatment: Effective combination antimicrobial therapy is curative, with treatment durations varying from a single treatment for singular lesions to 12 months or longer for more advanced disease. Clinical consultation and referral for treatment are available through the Mississippi State Department of Health and the National Hansen's Disease Program in Baton Rouge, Louisiana.

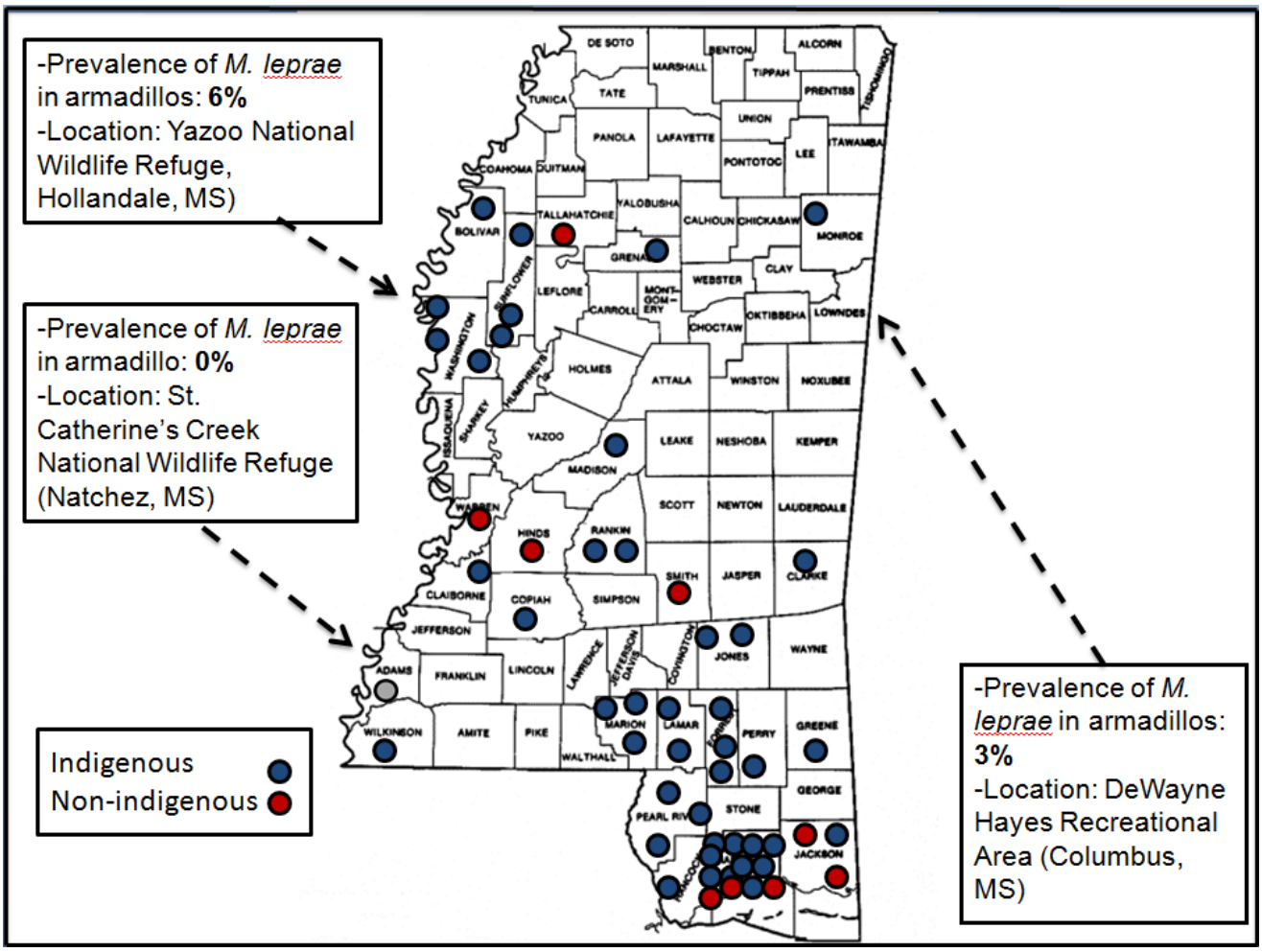
Epidemiology of Hansen's disease in Mississippi: A total of 53 cases of Hansen's disease have been reported in Mississippi from 1922 to 2013. The majority of the cases (43) have been classified as indigenous cases, defined as occurring in individuals living for more than 12 years in Mississippi prior the diagnosis(see Figure 1). Ten cases were classified as non-indigenous due to foreign birth (in a country with endemic Hansen's disease) or residency in MS of less than 12 years. Of the indigenous cases, the median age among the reported cases is 69 years, with ages of cases ranging from 23 to 87 years at time of diagnosis. A majority of the reported cases are male (77%); 86% of the cases are Caucasian and 14% are African-American.

Figure 1



Cases of indigenous leprosy have been identified in many parts of the state, with the majority occurring in south Mississippi and the Delta. Armadillos positive for *M. leprae* have been identified in two areas in Mississippi, the Delta and in Northeastern Mississippi. (Figure 2). Of sixteen indigenous cases with information on prior armadillo exposure, eight (50%) reported prior contact with armadillos. Information pertaining to the nature of the exposures was not available.

Figure 2 Distribution of leprosy cases, indigenous and non-indigenous, by county in Mississippi, 1922-2013 and identified prevalence of Leprosy in armadillos[2]



Conclusions: Hansen's disease is a rare but increasing diagnosis among Mississippi residents. Increased reports of Hansen's disease in Mississippi may reflect an increasing incidence, improved reporting or improved diagnostics. The majority of cases were identified in patients older than 62 years of age and 50% with available data reported previous contact with armadillos. Medical providers should consider a diagnosis of Hansen's disease in patients with persistent skin lesions, particularly if associated with localized loss of sensation or a history of exposure to armadillos.

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Acknowledgments: We are grateful for their contribution to Dr. Richard Truman and Dr. David Scollard from the National Hansen's Disease Program, Baton Rouge, LA.

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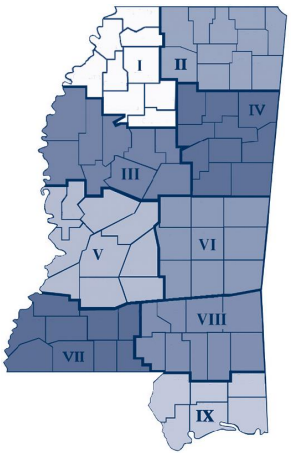

Mississippi
Provisional Reportable Disease Statistics

July 2014

		Public Health District									State Totals*			
		I	II	III	IV	V	VI	VII	VIII	IX	July 2014	July 2013	YTD 2014	YTD 2013
Sexually Transmitted Diseases	Primary & Secondary Syphilis	-	-	-	-	-	-	-	-	-	†	†	†	†
	Early Latent Syphilis	-	-	-	-	-	-	-	-	-	†	†	†	†
	Gonorrhea	-	-	-	-	-	-	-	-	-	†	†	†	†
	Chlamydia	-	-	-	-	-	-	-	-	-	†	†	†	†
	HIV Disease	-	-	-	-	-	-	-	-	-	†	†	†	†
Myco-bacterial Diseases	Pulmonary Tuberculosis (TB)	0	1	1	1	4	0	0	1	1	**9**	4	39	41
	Extrapulmonary TB	0	1	1	0	0	0	0	0	0	**2**	1	4	2
	Mycobacteria Other Than TB	0	4	1	1	3	2	0	1	4	**16**	32	218	225
Vaccine Preventable Diseases	Diphtheria	0	0	0	0	0	0	0	0	0	**0**	0	0	0
	Pertussis	0	0	0	0	1	0	0	0	0	**1**	9	47	37
	Tetanus	0	0	0	0	0	0	0	0	0	**0**	0	0	0
	Poliomyelitis	0	0	0	0	0	0	0	0	0	**0**	0	0	0
	Measles	0	0	0	0	0	0	0	0	0	**0**	0	0	0
	Mumps	0	0	0	0	0	0	0	0	0	**0**	0	0	0
	Hepatitis B (acute)	0	0	0	0	1	0	0	2	0	**3**	7	24	36
	Invasive *H. influenzae* disease	1	1	0	0	1	0	0	0	0	**3**	2	17	19
	Invasive Meningococcal disease	0	0	0	0	0	0	0	0	1	**1**	1	1	3
Enteric Diseases	Hepatitis A (acute)	0	0	0	0	0	0	0	0	0	**0**	1	1	2
	Salmonellosis	13	23	7	11	28	6	9	12	20	**131**	139	390	410
	Shigellosis	1	1	2	3	2	1	0	1	1	**12**	16	136	93
	Campylobacteriosis	4	1	1	0	0	0	1	1	2	**10**	10	54	59
	E. coli O157:H7/STEC/HUS	0	0	0	0	0	0	0	3	1	**4**	6	18	22
Zoonotic Diseases	Animal Rabies (bats)	0	0	0	0	1	0	0	0	0	**1**	0	1	1
	Lyme disease	0	0	0	0	0	0	0	0	0	**0**	0	0	0
	Rocky Mountain spotted fever	0	0	0	0	0	0	0	0	0	**0**	14	4	29
	West Nile virus	0	0	0	0	2	0	2	0	0	**4**	7	6	13

*Totals include reports from Department of Corrections and those not reported from a specific District.

†Data not available.