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Skeleton Pushes Back Leprosy's Origins

By Constance Holden
ScienceNOW Daily News
 27 May 2009

Leprosy has been with us a lot longer than we thought. In a new study, researchers report the discovery of a 4000-year-old skeleton in India with the hallmark ravages of the disease. The find pushes back the origins of leprosy at least 1500 years and gives clues to how the disease spread across the globe.

Until now, the earliest, widely accepted evidence for leprosy has been from South Asian texts dating to the 6th century B.C.E., which refer to characteristic numbness in the fingers and toes of afflicted individuals. Leprosy starts by attacking the skin and peripheral nerves but can eventually eat its way into bone. The earliest definitive skeletal evidence is from Egypt in the 2nd century B.C.E. The Vedas, the sacred writings of Hinduism, mention what could be leprosy near the end of the second millennium B.C.E.

Now it appears that the Vedic texts were accurate. A team of Indian and U.S. scientists reports online today in *PLoS ONE* finding signs of leprosy in a skeleton buried about 4000 years ago in northwest India.

The skeleton was found during excavations of a site called Balathal in Rajasthan. There, a settlement of copper-working people lived in stone or mud-brick huts and grew barley. The bones were buried in ash from cow dung in a thick-walled stone enclosure on the edge of the settlement. Radiocarbon dating indicated the skeleton, a male in his late 30s, was buried between 2500 and 2000 B.C.E. Although the skeleton was fragmentary, researchers found erosion and pitting of the bone around the nose and cheeks as well as in the ribs, vertebrae, and limbs. Loss of bone around the nose and destruction of the nasal spine is a hallmark of leprosy, say the authors, led by anthropologist Gwen Robbins of Appalachian State University in Boone, North Carolina.

The authors say they were able to rule out the other most likely explanations for the man's condition, namely, tuberculosis or a bone infection. TB involves osteoporosis in the spine; there were no signs of dying bone tissue caused by infection.

The report sheds light on where leprosy emerged and how it found its way around the globe. A genomic analysis in 2005 suggested (*ScienceNOW*, 12 May 2005) that the disease could have first spread with the emergence of modern humans from East Africa; other researchers have suggested more recent origins. The authors favor the notion that leprosy appeared in the 3rd millennium B.C.E., possibly in India, as urbanization and trade routes grew, because close contact between humans is needed for disease transmission.

Ron Pinhasi, a biological anthropologist who studies paleopathology at University College Cork in Ireland agrees with that interpretation. "The Balathal case ... fits well with our scenario and is an important contribution to current knowledge," he says.

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Hallmarks. The bone erosion seen in these photographs of a 4000-year-old skeleton are consistent with leprosy.

CREDIT: GWEN ROBBINS *ET AL.*, *PLOS ONE*, 4,5 (MAY 2009)

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Guest Leprosy is mentioned in the Biblical exodus which was at least 1100BC. Which predates the south asian texts by 500 years. Try again Holden

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LLB Only the oldest parts of Exodus are thought to be from around 1100BC. I don't believe these parts mention leprosy. Besides, elements of the Vedas are at least as old as Exodus. You would have to know which parts are being referred to in order to correct Holden in the matter.

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Guest University College Cork is in Ireland, not the UK.

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Moderator Thank you for catching that. We have made the correction.

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Guest The "leprosy" spoken of in the bible was reference to skin conditions that included such things as exzema and psoriasis. There is even reference in Deuteronomy to cleansing a leprosic building (most likely of mold). There is no clear indication that the word translated and leprosy refers to the disease as we know it today.

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