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## NOTABLE NOTES

### Boils—A Modern Take on the Plague of Egypt

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Before modern science could explain ancient phenomena, people turned to religion and faith for answers. The Bible has long provided guidance for many religions, but it is often underappreciated as a historical text with insights into medical afflictions.

The Book of Exodus documents 10 biblical plagues that passed over Egypt as a form of punishment. The sixth plague fell upon the people as “festering boils [which] will break out on men and animals throughout the land.” The condition, known as *Zaraath*, described throughout the Bible, is commonly referred to as “leprosy.” The Book of Leviticus in the Hebrew Bible contains guidelines for diagnosing leprosy, such as, “when a man shall have in the skin of his flesh a rising, a scab, or bright spot...the priest shall look on the plague in the skin of the flesh: and when the hair in the plague has turned white, and the plague in sight be deeper than the skin of the flesh, it is a plague of leprosy.”<sup>1</sup> Despite a widely accepted interpretation of this pathologic description as leprosy, much controversy still surrounds the differential diagnosis of the described disease. Dermatologist E. L. McEwen claimed that the description found in Leviticus encompassed various inflammatory skin diseases, while scholar Julius Preuss narrowed down the differential diagnosis to syphilis or leprosy.<sup>1</sup>

*Mycobacterium leprae* causes cutaneous pathologic abnormalities ranging from tuberculoid to lepromatous leprosy. The former, characterized by the formation of granulomas with few, scattered bacteria, presents as localized, well-demarcated, and hypopigmented lesions on the skin. The more diffusely distributed lepromatous leprosy is linked to a predominantly humoral response, which on pathological examination demonstrates large numbers of bacteria in dermal macrophages and Schwann cells. This results in neuropathy, skin lesions, plaques, and a thickened dermis.<sup>2</sup> Conversely, *Treponema pallidum* causes primary skin lesions (chancres) that present as painless ulcers with associated infiltration of polymorphonuclear leukocytes and macrophages. These chancres are usually localized to the external genitalia. The secondary phase of untreated syphilis then progresses to cause a diffuse erythematous

eruption with skin lesions of various morphologic abnormalities distributed all over the body.<sup>2</sup> Each of these infectious skin diseases reflects various aspects of the disease *Zaraath* from the Hebrew Bible.

In the Book of Job, the protagonist presents with “sore boils from the sole of his foot unto his crown,”<sup>1</sup> which makes a diagnosis of syphilis less likely, as that disease commonly spares the palms and soles. Today, the common term *boil* is recognized by dermatologists as a type of deep folliculitis, which presents in a follicular distribution as raised, painful, and erythematous accumulations of pus. The lesions are most commonly caused by *Staphylococcus aureus*.<sup>3</sup> A severe infection can spread throughout the bloodstream and cause systemic morbidities such as sepsis, infective endocarditis, necrotizing fasciitis, or pneumonia. Ibler and Kromann<sup>3</sup> proposed *S aureus* as the cause of Job's affliction.

Mentioned several times throughout the Old Testament, boils were historically thought to be a punishment for an individual's sins. Despite modern speculation about the various etiologies of Job's disease or the biblical plagues, physicians will agree that a proper diagnosis necessitates a detailed history, patient examination, and, oftentimes, laboratory confirmation. However, regardless of religious beliefs, modern medicine can certainly appreciate the historical context and insight that the Bible lends to the multifaceted dermatologic differential diagnosis of boils.

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