Plantar Foot Burns Among Diabetic Adults During Beach Season

Presenting Author	Andrea Becemberg, Student, The Burn Unit, HIMA-San Pablo, Caguas, PR
Co-authors	Amín D. Jaskille, MD, The Burn Unit, HIMA-San Pablo, Caguas, PR
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Abstract

Diabetic neuropathy damages nerves leading to numbness and loss of sensation in feet, rendering those patients more susceptible to burns. A 5 year chart review revealed that our burn center manages 9-14 adult plantar foot burns annually. During Spring and Summer, temperatures rise and more people go to the beach and pool. While the ambient temperature is known, we don't pay attention to the temperature of the sidewalk and asphalt. With many people walking barefoot at these activities, those with neuropathy could be at an increased risk. Our hypothesis was that the temperature on the asphalt and sidewalk will be higher than the ambient temperature, with the asphalt higher than the sidewalk. To test this, ambient, sidewalk and asphalt temperatures were recorded daily during peak sunlight hours (11AM-1PM) with a laser and an infrared thermometer, in two separate locations near sea level for 7 days. Repeated measurements were taken to ensure consistency. The mean ambient temperature was 89.2 F. The temperatures with the laser thermometer were 117.3 F for the sidewalk and 141.8 F for asphalt and with the infrared thermometer 103 F and 117.4 F, respectively. These temperatures are well above the threshold established for scald injuries, where it is estimated that a temperature of 120 F will cause a second degree burn after a 5 minute contact time and that a temperature of 140 F will do the same after only 5 seconds. It is crucial to raise awareness of walking barefoot in these outdoor activities, particularly among diabetics.

Learning Objectives

Describe a risk factor for plantar foot burns