**ABSTRACT**

**BACKGROUND:** Cutaneous leishmaniasis is widely distributed, Spain being a hypoendemic region. Noninvasive bedside detection of the histopathologic response to the intracellular organism that allows rapid diagnosis and prompt therapy could be the ideal tool to manage a commonly self-healing lesion. Confocal microscopy is a technique which allows in vivo examination of the skin at cellular resolution. **METHODS:** We describe the in vivo confocal microscopic features of cutaneous leishmaniasis, finding a correlation with dermoscopy and histopathology. **CONCLUSIONS AND RELEVANCE:** This case illustrates the capability of confocal microscopy to characterize the cutaneous infection by Leishmania organisms and to perform a noninvasive diagnosis.