

# Seborrheic keratosis-like lesions localized to tattoo



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## INTRODUCTION

Seborrheic keratoses (SKs) are benign epidermal neoplasms commonly encountered in the adult population. Multiple SKs have been described arising in an eruptive fashion in the context of a precipitating event such as malignancy or erythroderma.<sup>1</sup> However, multiple SK-like lesions arising in association with a tattoo are rarely reported in the literature.<sup>2,3</sup>

## CASE

A 26-year-old immunocompetent African-American man presented with a years-long history of skin-colored papules localized within the lines of a black ink tattoo on his anterior neck (Fig 1). The initial clinical differential diagnosis included syringomas, verrucae plana, verrucae vulgaris, and seborrheic keratoses. A shave biopsy found histologic features of papillomatosis with keratin granulomas and adventitious tattoo pigmentation but no definitive features of verruca plana or verruca vulgaris. Given high clinical suspicion for verrucae, repeat biopsy with human papilloma virus (HPV) testing was discussed and ultimately performed at the patient's request. Histopathologic examination again found no evidence of viral changes but instead found typical features of SK (Fig 2). HPV polymerase chain reaction (PCR; interpreted by NeoGenomics Laboratories, Inc, Fort Myers, Florida) was negative for HPV serotypes 6, 11, 16, 18, 31, 33, 45, and 58, supporting the diagnosis. Given continued suspicion that these lesions represented virally mediated verrucae, broader HPV analysis was pursued. Additional HPV typing by PCR using nested FAP,

### Abbreviations used:

HPV: human papilloma virus  
 PCR: polymerase chain reaction  
 SK: seborrheic keratoses

PGMY09/11, and GP5<sup>+</sup>/6<sup>+</sup> (PGMY-GP<sup>+</sup>) primer systems was performed (interpreted by the Laboratory for Molecular Studies in Mucocutaneous Diseases, Department of Dermatology, University of Texas Health Science Center at Houston, Houston, Texas) revealing no detectable HPV PCR product. As no evidence of HPV-mediated infection was identified by amplified PCR, the lesions were considered to be SKs.

## DISCUSSION

To our knowledge, only 2 other cases of eruptive lesions with features of seborrheic keratoses localized to tattoos and negative HPV studies have been previously reported.<sup>2,3</sup> One such case was part of a case series in which the other 2 included cases did ultimately test positive for HPV strains.<sup>3</sup> The relative paucity of reports of similar SK-like lesions localized to tattoo markings underscores the novelty of this case. Most similarly published reports have involved verruca vulgaris associated with tattoos.<sup>4,5</sup>

Although the lesions in our case were not solely restricted to the areas containing black tattoo ink, they certainly favored these areas. Furthermore, the patient did not have tattoos incorporating ink pigments other than black for comparison, nor were similar lesions identified elsewhere on the patient's

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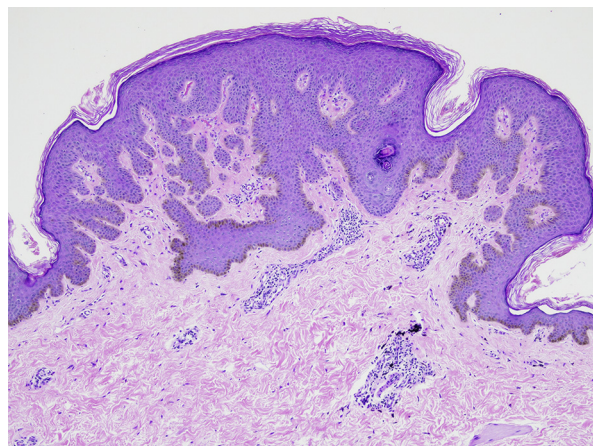
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**Fig 1.** Skin-colored papules localized primarily, but not exclusively, to areas of black ink tattoo.

body. Additionally, there was no histologic evidence of pseudoepitheliomatous hyperplasia or follicular induction to suggest a hyperplastic response to an underlying dermal stimulus. Although the exact pathophysiologic process giving rise to the lesions in our case is unclear, one could consider a reactive process in response to cutaneous injury, such as that induced via a tattoo needle. Reactive SKs in response to ultraviolet-induced cutaneous injury have been described.<sup>6</sup>

The distinction between seborrheic keratoses and verrucae typically only becomes an issue of diagnostic uncertainty when lesions are localized to the genital region.<sup>7</sup> Outside of the genital region, extensive HPV analysis including less commonly tested HPV strains has ultimately proved positive in lesions clinically resembling SKs.<sup>8</sup> Li and Ackerman<sup>7</sup> proposed that if lesions contain HPV, they are more



**Fig 2.** Acanthotic epidermal proliferation with slight papillomatosis, few early horn cysts, and tattoo pigment in the dermis. (Hematoxylin-eosin stain; original magnification:  $\times 4$ .)

appropriately categorized as verruca. In our case, amplified HPV PCR analysis was uniformly negative. Given the high sensitivity of nested PCR for HPV DNA amplification, we can say with a fair degree of certainty that HPV did not play an etiologic role in these lesions.<sup>9,10</sup> In addition, although several of the morphologic features of both types of lesions overlap, they are also of consideration when differentiating between the 2 entities. The histologic features exhibited in our case conform entirely with SKs. The lesions harbor no architectural characteristics of verrucae, including koilocytic change, ectatic papillary dermal vasculature, hypergranulosis, or inward bending of the rete ridges, and otherwise represent classic histologic examples of SKs. These features combined with the negative PCR analysis support our conclusion that these lesions are truly SKs.

We present this case to broaden the clinical differential diagnosis of lesions and associated dermatoses arising in an eruptive fashion localized to tattoos and related forms of body art.

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