ONLINE EXCLUSIVE

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Squamous cell carcinoma

THE COMPARISON

A A 51-year-old Hispanic man with a squamous cell carcinoma (SCC) of the keratoacanthoma type on the arm.

B A 75-year-old Black man with an SCC of the keratoacanthoma type on the abdomen.

C An African woman with an SCC on the lower lip decades after a large facial burn, which is known as a *Marjolin ulcer*.

Cutaneous squamous cell carcinoma (SCC) develops from a malignant tumor of the keratinocytes, eccrine glands, or pilosebaceous units that invades the dermis. Risk factors include lighter skin tone, higher cumulative sun exposure, human papillomavirus (HPV) infection, hidradenitis suppurativa (HS), lichen sclerosus, family history of skin cancer,[1] and immunosuppression.[2] It typically affects sun-exposed areas of the body such as the face, scalp, neck, and extensor surfaces of the arms (**FIGURE A**).[3,4] However, in those with darker skin tones, the most common anatomic sites are those that are not exposed to the sun (**FIGURE B**). SCC is diagnosed via skin biopsy. Treatment options include surgical excision, destructive methods such as electrodesiccation and curettage, and Mohs micrographic surgery. Cutaneous SCC has a cure rate of more than 95% and a mortality rate of 1.5% to 2% in the United States.[3]

Epidemiology

SCC is the most common skin cancer occurring in Black individuals, manifesting primarily in the fifth decade of life.[5-7] It is the second most common skin cancer in White, Hispanic, and Asian individuals and is more common in males.[8] In a study of organ transplant recipients (N = 413), Pritchett et al[9] reported that HPV infection was a major risk factor in Hispanic patients because 66.7% of those with SCC had a history of HPV. However, HPV is a risk factor for SCC in all ethnic groups.[10]

Key clinical features in people with darker skin tones

Anatomic location

- The lower legs and anogenital areas are the most common

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sites for SCC in patients with skin of color.[4,11]

- In Black women, SCC occurs more often on sun-exposed areas such as the arms and legs compared to Black men.[7,12-14]
- The genitalia, perianal area, ocular mucosa, and oral mucosa are the least likely areas to be routinely examined, even in skin cancer clinics that see high-risk patients, despite the SCC risk in the anogenital area.[15,16]
- Squamous cell carcinoma of the lips and scalp is more likely to occur in Black women vs Black men.[4,7,17]

Clinical appearance

- In those with darker skin tones, SCCs may appear hyperpigmented[4] or hyperkeratotic with a lack of erythema and an inconsistent appearance.[6,7,18]
- A nonhealing ulceration of the skin should prompt a biopsy to rule out SCC.[3,19]

Worth noting

In patients with darker skin tones, the risk for SCC increases in areas with chronic inflammation and scarring of the skin.[4,6,7,11,18,20-22] In Black patients, 20% to 40% of cases of SCC occur in the setting of chronic inflammation and scarring.[6,7,18] Chronic inflammatory conditions include ulcers, lupus vulgaris, discoid lupus erythematosus, and HPV. In patients with discoid lupus erythematosus, there is an additive effect of sun exposure on the scars, which may play a role in the pathogenesis and metastasis risk for skin cancer in Black patients.[4] Other scarring conditions include thermal or chemical burn scars, areas of physical trauma, and prior sites of radiation treatment.[14,23] SCC arising in a burn scar is called a *Marjolin ulcer* or *malignant degeneration of a scar* (**FIGURE C**). It is reported more often in lower-income, underresourced countries, which may suggest the need for early detection in populations with skin of color.[24]

SCC is more aggressive in sites that are not exposed to sun compared to sun-exposed areas.[17,25]

The risk for SCC is increased in immunocompromised patients,[2] especially those with HPV.[10]

The prevalence of SCC in those with HS is approximately 4.6%. The chronic inflammation and irritation from HS in association with other risk factors such as tobacco use may contribute to the malignant transformation to SCC.[26]

Health disparity highlight

- The risk for metastasis from SCC is 20% to 40% in Black patients vs 1% to 4% in White patients.[4,6,27]
- Penile SCC was associated with a lower overall survival rate in patients of African descent.[20,21]
- The increased morbidity and mortality from SCC in patients with skin of color may be attributed to delays in diagnosis and treatment as well as an incomplete understanding of tumor genetics.[4,6,18] JFP

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References

1. Asgari MM, Warton EM, Whittemore AS. Family history of skin cancer is associated with increased risk of cutaneous squamous cell carcinoma. *Dermatol Surg*. 2015;41:481-486. doi: 10.1097/DSS.0000000000000292
2. Harwood CA, Surentheran T, McGregor JM, et al. Human papillomavirus infection and non-melanoma skin cancer in immunosuppressed and immunocompetent individuals. *J Med Virol*. 2000;61:289-297. doi: 10.1002/1096-9071(200007)61:3<289::aid-jmv2>3.0.co;2-z
3. Kallini JR, Nouran H, Khachemoune A. Squamous cell carcinoma of the skin: epidemiology, classification, management, and novel trends. *Int J Dermatol*. 2015;54:130-140. doi: 10.1111/ijd.12553.
4. Agbai ON, Buster K, Sanchez M, et al. Skin cancer and photoprotection in people of color: a review and recommendations for physicians and the public *J Am Acad Dermatol*. 2014;70:748-762. doi: 10.1016/j.jaad.2013.11.038
5. Bradford PT. Skin cancer in skin of color. *Dermatol Nurse*. 2009;21:170-177.
6. Gloster HM, Neal K. Skin cancer in skin of color. *J Am Acad Dermatol*. 2006;55:741-760.
7. Davis DS, Robinson C, Callender VD. Skin cancer in women of color: epidemiology, pathogenesis and clinical manifestations. *Int J Womens Dermatol*. 2021;7:127-134. doi: 10.1016/j.ijwd.2021.01.017
8. Baum B, Duarte AM. Skin cancer epidemic in American Hispanic and Latino patients. In: Silverberg N, Duran-McKinster C, Tay Y-K, eds. *Pediatric Skin of Color*. Springer; 2015:453-460.
9. Pritchett EN, Doyle A, Shaver CM, et al. Nonmelanoma skin cancer in nonwhite organ transplant recipients. *JAMA Dermatol*. 2016;152: 1348-1353. doi: 10.1001/jamadermatol.2016.3328
10. Karagas MR, Nelson HH, Sehr P, et al. Human papillomavirus infection and incidence of squamous cell and basal cell carcinomas of the skin. *J Natl Cancer Inst*. 2006;98:389-395. doi: 10.1093/jnci/djj092
11. Gohara M. Skin cancer: an African perspective. *Br J Dermatol*. 2015;173:17-21. doi: 10.1111/bjd.13380
12. Armstrong BK, Kricker A. The epidemiology of UV induced skin cancer. *J Photochem Photobiol B*. 2001;63:8-18. doi: 10.1016/s1011-1344(01)00198-1
13. Halder RM, Bang KM. Skin cancer in African Americans in the United States. *Dermatol Clin*. 1988;6:397-407.

14. Mora RG, Perniciaro C. Cancer of the skin in blacks. I. a review of 163 black patients with cutaneous squamous cell carcinoma. *J Am Acad Dermatol*. 1981;5:535-543. doi: 10.1016/s0190-9622(81)70113-0
15. Bajaj S, Wolner ZJ, Dusza SW, et al. Total body skin examination practices: a survey study amongst dermatologists at high-risk skin cancer clinics. *Dermatol Pract Concept*. 2019;9:132-138. doi: 10.5826/dpc.0902a09
16. Rieder EA, Mu EW, Wang J, et al. Dermatologist practices during total body skin examinations: a survey study. *J Drugs Dermatol*. 2018;17:516-520.
17. Halder RM, Ara CJ. Skin cancer and photoaging in ethnic skin. *Dermatol Clin*. 2003;21:725-732, x. doi: 10.1016/s0733-8635(03)00085-8
18. Higgins S, Nazemi A, Chow M, et al. Review of nonmelanoma skin cancer in African Americans, Hispanics, and Asians. *Dermatol Surg*. 2018;44:903-910.
19. Sng J, Koh D, Siong WC, et al. Skin cancer trends among Asians living in Singapore from 1968 to 2006. *J Am Acad Dermatol*. 2009;61:426-432.
20. Shao K, Feng H. Racial and ethnic healthcare disparities in skin cancer in the United States: a review of existing inequities, contributing factors, and potential solutions. *J Clin Aesthet Dermatol*. 2022;15:16-22.
21. Shao K, Hooper J, Feng H. Racial and ethnic health disparities in dermatology in the United States. Part 2: disease-specific epidemiology, characteristics, management, and outcomes. *J Am Acad Dermatol*. 2022;87:733-744. doi: 10.1016/j.jaad.2021.12.062
22. Zakhem GA, Pulavarty AN, Lester JC, et al. Skin cancer in people of color: a systematic review. *Am J Clin Dermatol*. 2022;23:137-151. doi: 10.1007/s40257-021-00662-z
23. Copcu E, Aktas A, Sişman N, et al. Thirty-one cases of Marjolin's ulcer. *Clin Exp Dermatol*. 2003;28:138-141. doi: 10.1046/j.1365-2230.2003.01210.x
24. Abdi MA, Yan M, Hanna TP. Systematic review of modern case series of squamous cell cancer arising in a chronic ulcer (Marjolin's ulcer) of the skin. *JCO Glob Oncol*. 2020;6:809-818. doi: 10.1200/GO.20.00094
25. Hogue L, Harvey VM. Basal cell carcinoma, squamous cell carcinoma, and cutaneous melanoma in skin of color patients. *Dermatol Clin*. 2019;37:519-526. doi: 10.1016/j.det.2019.05.009
26. Chapman S, Delgadillo D, Barber C, et al. Cutanteous squamous cell complicating hidradenitis suppurativa: a review of the prevalence, pathogenesis, and treatment of this dreaded complication. *Acta Dermatovenerol Al Pannocica Adriat*. 2018;27:25-28.
27. Kailas A, Botwin AL, Pritchett EN, et al. Assessing the effectiveness of knowledge-based interventions in increasing skin cancer awareness, knowledge, and protective behaviors in skin of color populations. *Cutis*. 2017;100:235-240.