Chondrodermatitis Nodularis Helicis After Mohs Micrographic Surgery and Radiation Therapy

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PRACTICE **POINTS**

- Although chondrodermatitis nodularis helicis (CNH) is benign by nature, it can mimic tumor recurrence when it presents close to the site of prior Mohs micrographic surgery (MMS). Diagnostic biopsy of CNH should be considered to rule out recurrence of skin cancer.
- Skin lesions in close proximity to a prior MMS site should lower the threshold for biopsy because the area is already known to be affected by actinic damage and cutaneous carcinogenesis.

To the Editor:

Chondrodermatitis nodularis helicis (CNH) is a benign inflammatory condition of the cartilage of the helix or antihelix as well as the overlying skin. Inflammation produces a firm painful nodule that often forms a central crust and enlarges rapidly, mimicking cutaneous malignancy. Chondrodermatitis nodularis helicis is believed to be caused by chronic pressure on the pinna, usually from sleeping, which causes compromised blood supply. However, there is a wide range of additional risk factors,[1] including trauma (eg, pressure), environmental insult (eg, sun or cold exposure), and autoimmune processes (eg, systemic lupus erythematosus, scleroderma). Chondrodermatitis nodularis helicis after Mohs micrographic surgery (MMS) is rare. We report a novel case of CNH as a postoperative complication of MMS following adjuvant radiation therapy.

A 61-year-old man presented to the MMS clinic for treatment of a primary squamous cell carcinoma of the right posterior helix. Stage I MMS demonstrated tumor invasion in the deep dermis directly overlying the auricular cartilage, as well as large-nerve (ie, >0.1 mm) perineural invasion. Two additional stages were taken; negative margins were obtained on Stage III. The defect was repaired by primary closure (Figure 1). Considering the presence of perineural invasion around a large nerve, the patient elected to receive adjuvant radiation therapy consisting of 50 Gy in 20 fractions administered to the right ear over 1 month.

Two months after completion of adjuvant radiation therapy, the patient returned to the clinic with a tender pink papule on the right crus within the radiation portal but nonadjacent to the surgical scar (Figure 2). Histopathology from a tangential biopsy revealed acanthosis, dermal sclerosis, and degenerated cartilage, consistent with CNH. Stellate fibroblasts also were seen, suggesting changes related to prior radiation therapy (Figure 3).

Although CNH is a benign condition, it can be concerning in the context of patient follow-up after MMS given its clinical appearance, which is similar to nonmelanoma skin cancer. The differential diagnosis of CNH includes hypertrophic actinic keratosis, basal cell carcinoma, and squamous cell carcinoma. The diagnosis is based on clinical history and confirmed by histopathologic examination.

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The authors report no conflict of interest.

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doi:10.12788/cutis.0773

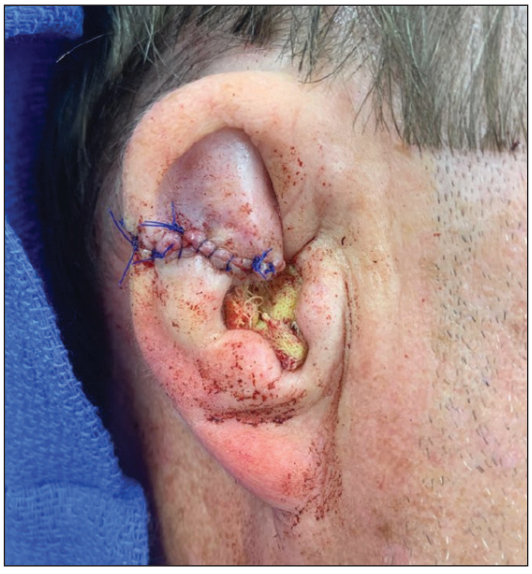

FIGURE 1. Primary repair of a surgical wound on the right ear.

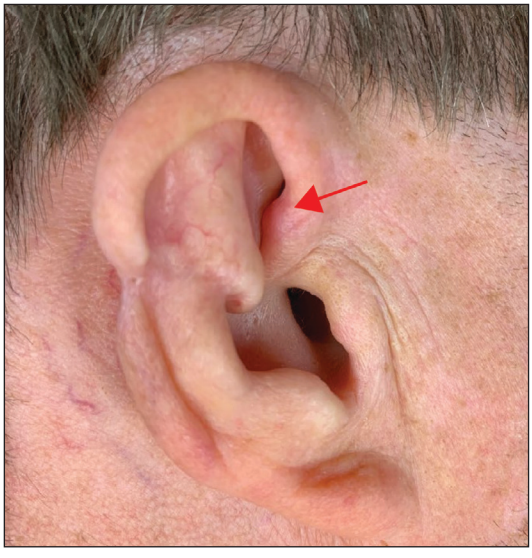

FIGURE 2. Following radiation therapy, chondrodermatitis nodularis helicis (arrow) developed outside the surgical scar but within the adjuvant radiation portal.

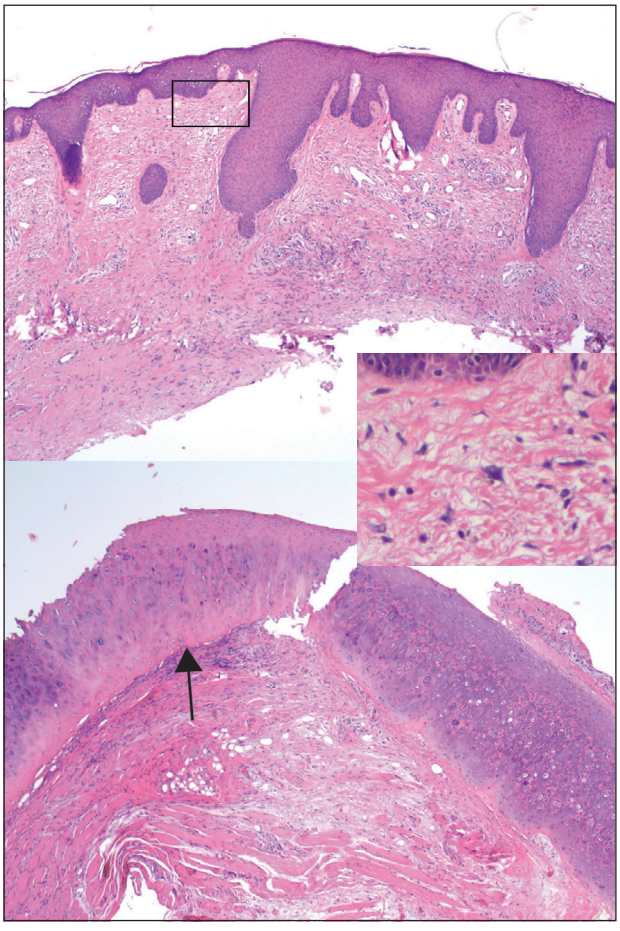

FIGURE 3. Top, Histopathology of a tangential biopsy revealed an acantholytic epidermis with dermal inflammation (H&E, original magnification ×40). Bottom, Higher-power view showed degenerated cartilage (arrow) consistent with chondrodermatitis nodularis helicis (H&E, original magnification ×100). Inset, Highest-power view of the area in the black box (top) demonstrated scattered stellate fibroblasts in the papillary dermis consistent with prior radiation changes (H&E, original magnification ×200).

biopsy because the area is already known to be affected by actinic damage and cutaneous carcinogenesis. The histopathology of CNH often is characterized by epidermal acanthosis with ulceration, perichondral fibrosis, and a variable degree of cartilage degeneration associated with granulation tissue.[2]

The scarce subcutaneous tissue and limited blood supply of the pinna offer minimal cushioning and poor circulation to underlying cartilage. These anatomic features predispose the pinna to inflammation and ischemia.[1] Mohs micrographic surgery may inadvertently cause damage to surrounding tissue because of excision of cartilage, mechanical manipulation, severance of the extant blood supply, electrocautery, fenestration in preparation for skin grafting, compression from a wound dressing, and other factors related to surgery. In addition, following MMS, scar tissue and swelling with compression of adjacent structures can further inhibit circulation and lead to CNH.

In our case, multiple factors may have contributed to CNH after MMS, including postoperative swelling and compression, prior actinic damage, and other environmental factors. Given that CNH occurred within the radiation portal, we postulated that adjuvant radiation may have played a role in the pathogenesis of the patient's CNH. Pandya et al[3] reported CNH after radiation therapy for a brain tumor.

One prior study showed that CNH treated by surgical excision recurred in 34% of patients.[4] In all of these

patients, the CNH was completely excised; however, trauma from the surgical procedure itself likely resulted in recurrence of CNH. Darragh et al[5] reported a case of CNH after MMS on the right nasal vestibule following wound reconstruction that utilized a cartilage graft from the right ear.

Our patient demonstrated an unusual but concerning complication associated with MMS. The location of CNH also was not in a traditional location but rather near the superior helical crus. Although CNH is benign by nature, it can mimic recurrence of a tumor when it presents close to the site of prior MMS. Diagnostic biopsy of CNH should be considered to rule out recurrence of skin cancer.

REFERENCES

1. Salah H, Urso B, Khachemoune A. Review of the etiopathogenesis and management options of chondrodermatitis nodularis chronica helicis. *Cureus.* 2018;10:E2367. doi:10.7759/cureus.2367
2. Juul Nielsen L, Holkmann Olsen C, Lock-Andersen J. Therapeutic options of chondrodermatitis nodularis helicis. *Plast Surg Int.* 2016;2016:4340168. doi:10.1155/2016/4340168
3. Pandya AG, Kettler AH, Hoffmann TJ, et al. Chondrodermatitis helicis arising after radiation therapy. *Arch Dermatol.* 1988;124:185-186.
4. Moncrieff M, Sassoon EM. Effective treatment of chondrodermatitis nodularis chronica helicis using a conservative approach. *Br J Dermatol.* 2004;150:892-894. doi:10.1111/j.1365-2133.2004.05961.x
5. Darragh CT, Om A, Zwerner JP. Chondrodermatitis nodularis chronica helicis of the right nasal vestibule. *Dermatol Surg.* 2018;44:1475-1476. doi:10.1097/DSS.0000000000001515