A Case of Scapular Hidradenoma Treated as a Keloid

Asuka Takefa, MD*
Mamiko Tosa, MD, PhD*
Shin-ichi Ansai, MD, PhD†
Akira Ishiguro, MD*
Rei Ogawa, MD, PhD, FACS*

Summary: Hidradenomas are relatively rare benign tumors in the dermis that differentiate into eccrine or apocrine sweat glands. They often present as round or oval nodules and vary in color. Generally, they occur in the head and neck region. Keloid scars are often red, elevated lesions that are caused by chronic inflammation in the reticular dermis. These scars demonstrate a preference for high skin-tension sites, including the scapular region. Herein, we describe a case of a dark red hidradenoma on the scapular region with a high incidence of acne surrounding the lesion area that was initially diagnosed as an acne-initiated keloid. However, local steroid injection did not cure the lesion. After excision, histopathology revealed typical findings for hidradenoma, namely mucinous, polygonal, and clear cell composition. In some cases, as presented it may be challenging for clinicians to differentiate between hidradenoma and keloid due to the similar clinical features. Thus, hidradenoma should be taken in consideration as a differential diagnosis when encountering steroid-refractory keloid-like lesions. Moreover, early biopsy or surgical resection should be considered. (Plast Reconstr Surg Glob Open 2021;9:e3772; doi: 10.1097/GOX.0000000000003772; Published online 19 August 2021.)

Hidradenomas are relatively rare tumors of the sweat glands. They are usually solitary, elastic, round or oval in shape, and elevated tumors with texture varying from soft to hard, appearing as a dark red mass. They are mainly found on the head, upper limbs, and trunk, and particularly in middle-aged women.

A keloid is a chronic inflammatory fibroproliferative disorder of the reticular dermis that can occur in any age group but is most likely to develop between the ages of 11 and 30 years. These firm scars can be pink to red and grow both vertically and horizontally. They are often triggered by acne and are common to arise in the scapular region. Topical or injected steroids can resolve small keloids.

Herein, we experienced a case of hidradenoma on the acne-prone scapular region that presented with acne surrounding the tumor and was thus initially diagnosed as a keloid. After unsuccessful treatment with local steroid injection, the lesion was excised and found to be a hidradenoma. Thus, elevated skin tumors in the scapular region that associate with acne may be misdiagnosed as keloids. Because our literature analysis of hidradenoma as a keloid-like disease has not been revealed in previous reports, we report this case with discussion of the literature.

Case Report

A 19-year-old man was admitted to our hospital with chief complaint of a skin tumor on the right scapular region. He became aware of the tumor when he was 16 years of age. The lesion was diagnosed as verruca vulgaris in another hospital and was subjected several times to liquid nitrogen cryotherapy. However, because the lesion tended to increase in size, the patient consulted with another doctor, who diagnosed the lesion as a keloid and treated it with triamcinolone acetonide injection. However, the condition still failed to show improvement and the patient finally came to our hospital.

The physical examination revealed a 25-mm-diameter dark red and purple, hard, elastic, and nontender protuberant tumor on the right scapular region (Fig. 1A). The patient had acne on the back and shoulder region. Aside from the tissue damage that might have been caused by repeated liquid nitrogen therapy, there was no significant past medical history or history of previous major trauma to the affected area.

Under local anesthesia, the lesion was excised to the deep fascia with a 5-mm horizontal margin considering the possibility of diseases other than keloids. (See Video [online], which details the summary of the case; preoperative, intraoperative findings, and postoperative images.

From the *Department of Plastic, Reconstructive and Aesthetic Surgery, Nippon Medical School, Tokyo, Japan; and †Division of Dermatology and Dermatopathology, Nippon Medical School, Musashino Kosugi Hospital, Kawasaki, Japan.

Received for publication April 19, 2021; accepted June 29, 2021.
Copyright © 2021 The Authors. Published by Wolters Kluwer Health, Inc. on behalf of The American Society of Plastic Surgeons. This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 (CCBY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.
DOI: 10.1097/GOX.0000000000003772

Disclosure: The authors have no financial interest to declare in relation to the content of this article.

Related Digital Media are available in the full-text version of the article on www.PRSGlobalOpen.com.
Fig. 1. Clinical finding. A, Preoperative findings in the right scapula of a 19-year-old man. B, Appearance 5 months after surgery. There was no sign of recurrence.

Fig. 2. Histopathologic view (H&E). The tumor was a relatively well-defined nodular lesion. (A). The lesion consisted of scattered and fused foci composed of eosinophilic multilinage cells and clear cells with clear cytoplasm (B). The areas between the foci contained fibrotic granulation tissue formation (C).
in the right scapula are shown.) The subcutaneous tissue and deep fascia had no visible tumor tissue. After confirming hemostasis, the surgery was concluded with simple interrupted sutures. Histopathology revealed a relatively well-defined nodular lesion that extended from the dermis to the subcutaneous adipose tissue (Fig. 2A). The nodules contained tumor cell foci that were associated with increased numbers of collagen fibers. The foci were mainly composed of eosinophilic polyhedral cells and clear cells (Fig. 2B). The interior of the tumor foci contained vitrified collagen fibers. The areas between the foci exhibited increased numbers of blood vessels and fibroblasts, infiltration with various inflammatory cells, and fibrotic granulation tissue (Fig. 2C). Hidradenoma was diagnosed.

The postoperative course was satisfactory and the stitches were removed 11 days after surgery. In the succeeding 5 months, no signs of recurrence were observed (Fig. 1B).

**DISCUSSION**

Hidradenomas are often solitary, elastic, smooth intradermal tumors that can be round or oval, vary in color, and range from 5 to 30 mm in diameter. They can display some skin atrophy and ulceration. Although they occur in all age groups, they are most common in the head and neck region of middle-aged women with mean age at presentation is 37.2 years.

The most common differential diagnosis for hidradenoma is dermatofibroma, epidermal cyst, and basal cell carcinoma. To the best of our knowledge, keloids have not been reported previously as a differential disease for hidradenomas despite some overlapping clinical features, specifically, keloids’ appearance as raised lesions on the skin surface and the variance in color from normal skin color to bright red and brown. They can occur at any age but appear most often between 11 and 30 years of age. They commonly develop on the anterior chest, scapula, and pubic region. The preference to these sites reflects the fact that the patient was an active young person. Because fibrotic tissue is the hallmark histopathological feature of keloids, we speculate that the trauma and liquid nitrogen cryotherapy experienced by the patient’s hidradenoma may explain why it closely resembled a keloid clinically. Thus, if an elevated keloid-like skin tumor occurs in a tension-prone area in active young people, and the lesion is refractory to steroids, the clinician should suspect that repeated minor trauma or previous treatment may have caused the lesion to acquire keloid-like features and therefore, take other diseases in consideration.

In terms of hidradenoma treatment, the only known curative treatment is surgical resection. Although the frequency of malignant hidradenoma transformation is unknown, cases have been reported. Complete surgical resection is recommended as recurrence is likely to occur in incompletely resected cases and a malignant portant may be present in a single foci. Histopathologically, we performed a complete resection and 5 months later, no signs of recurrence were observed (Fig. 1B).

**CONCLUSIONS**

Hidradenomas on the scapular region may resemble keloids clinically in some cases and are also associated with two keloid-promoting factors, namely acne and high skin tension areas. Thus, this presented case should alert clinicians that hidradenoma and early biopsy or surgical excision should be considered when a keloid-like skin tumor is refractory to steroid treatment.

**REFERENCES**

1. Shahmoradi Z, Mokhtari F. Clear cell hidradenoma. *Adv Biomed Res*. 2013;2:40.
2. Yao C, Swaby MG, Migden MR, et al. A nodular hidradenoma of atypical location in pregnancy. *Acta Derm Venereol*. 2018;98:908–909.
3. Ramakrishnan KM, Thomas KP, Sundararajan CR. Study of 1,000 patients with keloids in South India. *Plast Reconstr Surg*. 1974;53:276–280.
4. Ogawa R. Keloid and hypertrophic scars are the result of chronic inflammation in the reticular dermis. *Int J Mol Sci*. 2017;18:606.
5. Nandeesh BN, Rajalakshmi T. A study of histopathologic spectrum of nodular hidradenoma. *Am J Dermatopathol*. 2012;34:461–470.
6. Akaishi S, Akimoto M, Ogawa R, et al. The relationship between keloid growth pattern and stretching tension: visual analysis using the finite element method. *Ann Plast Surg*. 2008;60:445–451.
7. Bhullar A, Lee BR, Shamsudin N. Nodular hidradenoma arising on the site of a BCG scar. *Australas J Dermatol*. 2017;58:e135–e137.
8. Limandjaja GC, Niessen FB, Schepers R, et al. The Keloid disorder: heterogeneity, histopathology, mechanisms and models. *Front Cell Dev Biol*. 2020;8:300.
9. Stratigos AJ, Olbricht S, Kwan TH, et al. Nodular hidradenoma. A report of three cases and review of the literature. *Dermatol Surg*. 1998;24:387–391.
10. Benmously-Mlika R, Jones M, Hammami H, et al. Nodular hidradenoma in a 19-year-old woman. *Pathologica*. 2011;103:311–312.