Keloid Development in Patients with Biopsy-Proven Central Centrifugal Cicatricial Alopecia

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Background

Central Centrifugal Cicatricial alopecia (CCCA) is a form of inflammatory scarring alopecia that commonly effects women of African American descent. It is characterized by its progressive nature, starting centrally and spreading outwards. Similarly to CCCA, keloids are characterized by an exaggerated inflammatory response to injury, more frequently observed in African American populations. [1] It has been previously studied that fibroproliferative genes, found in fibroproliferative disorders such as keloids, are upregulated in patients with CCCA.[2]

This raises the question of whether patients who are prone to keloid formation and who have been diagnosed with CCCA are more likely to develop keloids at their scalp biopsy site, and whether clinicians should take this possible adverse outcome into consideration when performing scalp biopsies.

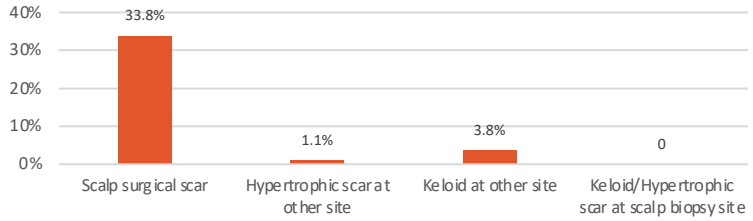
In our current study, we sought to investigate the incidence of keloid development in patients with CCCA.

Methods

We performed a chart review on 662 patients with biopsy-proven CCCA from the Kindred Hair and Skin Center. Patients were identified as having a subsequent diagnosis of a keloid, a hypertrophic scar, or a flat surgical scar. Location was noted to determine if fibroproliferative scar(s) developed at scalp biopsy site.

Results

- 34% of patients developed a flat surgical scar from their scalp biopsy on their 2-week follow-up suture removal visit.
- 1% of patients developed a hypertrophic scar at a site other than the scalp biopsy site.
- 4% of patients developed a keloid at a site **different** from the scalp biopsy site.
- **No patient developed a keloid or a hypertrophic scar at their scalp biopsy site.**



Discussion

- Formation of a flat surgical scar at the biopsy side is an expected physiologic response to skin damage and part of the tissue repair process. The tissue remodeling phase, which may take months to years, allows for the flat scar to get smaller and less visible over time.[3]
- Our findings suggest that while CCCA patients may have a higher tendency to develop keloids, keloids are unlikely to form at the scalp biopsy site. This is due to the low tissue stretch tension on the scalp compared to areas with higher tension, such as major joints, the anterior chest, scapula, and lower abdomen, where hypertrophic scars and keloids are more common.[4-5] This is because stretching a wound prolongs and worsens its inflammation, thereby provoking hypertrophic scar and keloid formation.[6-8]
- The reduced likelihood of stretching-induced inflammation on the scalp supports our findings in this study which suggest that scalp biopsies are generally safe for diagnosing CCCA in patients prone to keloid formation.

Conclusion

While some studies suggest a potential genetic link between CCCA and fibroproliferative disorders like keloids, no studies have specifically examined keloid development at the scalp biopsy site in patients with biopsy-proven CCCA. Our findings indicate that keloid formation at the scalp biopsy site in these patients is unlikely. This alleviates concerns about possible adverse outcomes from performing scalp biopsies to diagnose primary cicatricial alopecia, including CCCA.

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