

Cutaneous and Extracutaneous Disease Burden, Demographics, and Treatment Modalities in Patients with Alopecic Sarcoidosis: A Systematic Review



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Background

- Alopecic sarcoidosis is an uncommonly reported cutaneous manifestation of sarcoidosis with limited literature suggesting a higher prevalence among Black patients.¹⁻⁶
- Both scarring (SA) and non-scarring alopecic (NSA) sarcoidosis have been reported.
- Limited data exists guiding evaluation and treatment of alopecic sarcoidosis.
- In this systematic review, we aimed to:
 - Identify clinicopathologic features of SA and NSA
 - Elucidate associations between alopecic sarcoidosis, race, and extracutaneous disease
 - Review treatments

Methods

- Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines (PRISMA), two authors independently searched PubMed, Scopus and Google Scholar from inception through August 2023.
- Search terms used in various combinations included: *sarcoid*, *sarcoidosis*, *alopecia*, *hair*, *scalp*, *cicatricial*, *scarring* and *non-scarring*
- Inclusion criteria encompassed publications with at least 1 case of sarcoidosis alopecia, excluding non-English publications.
- Treatment quality was assessed using the modified Oxford Centre's Level of Evidence scale.⁷
- P-values were calculated with Pearson χ^2 for categorical variables and Student's T-test or Analysis of Variance for continuous variables as appropriate.

Table 1. Characteristics of cases of sarcoidosis alopecia and scalp sarcoidosis

| Characteristics n (%) | All cases (n= 77) | Scarring alopecia (n= 47) | | Non-scarring alopecia (n= 18) | | Scalp sarcoidosis without alopecia (n= 6) | | p-value comparing all groups |
|--------------------------|----------------------|---------------------------------|------------------|-------------------------------------|---------|---|--------------|------------------------------------|
| | | | p-value | | p-value | | p-value | |
| Age (years), mean (SD) | 48.9 (16.2) | 52.8 (15.1) | | 40.1 (16.3) | | 54.7 (19.3) | | 0.02 |
| Sex | | | <0.001 | | 0.81 | | 0.10 | <0.001 |
| Female | 51(70.8%) | 37 (86%) | | 8 (47.1%) | | 1 (16.7%) | | |
| Male | 21 (29.2%) | 6 (14%) | | 9 (52.9%) | | 5 (83.3%) | | |
| Not stated | 5 | 4 | | 1 | | 0 | | |
| Race | | | <0.001 | | 0.26 | | 0.61 | 0.39 |
| Black | 32 (71.1%) | 22 (75.9%) | | 5 (55.6%) | | 1 (50%) | | |
| White | 9 (20%) | 5 (17.2%) | | 3 (33.3%) | | 0 | | |
| Asian | 4 (8.8%) | 2 (6.9%) | | 1 (11.1%) | | 1 (50%) | | |
| Not stated | 32 | 18 | | 9 | | 4 | | |
| Systemic sarcoidosis | | | 0.03 | | 0.06 | | 0.014 | |
| Yes | 55 (71.4%) | 31 (66%) | | 13 (72.2%) | | 6 (100%) | | 0.32 |
| No | 22 (28.6%) | 16 (34%) | | 5 (27.8%) | | 0 | | |

Table 2. Summary of treatment, stratified by alopecia subtype*

| | All cases (n= 77) | Scarring alopecia (n= 47) | Non-scarring alopecia (n= 18) | Scalp sarcoidosis without alopecia (n= 6) | p-value |
|--|----------------------|---------------------------------|-------------------------------------|---|-------------|
| Treatment given | | | | | |
| Yes | 48 (62.3%) | 30 (63.8%) | 12 (66.7%) | 5 (83.3%) | 0.08 |
| No/ Not stated | 29 (37.7%) | 17 (36.2%) | 6 (33.3%) | 1 (16.7%) | |
| Total number of treatments given, mean (SD) | 2.3 (1.6) | 2.6 (1.8) | 1.8 (1.4) | 1.4 (0) | 0.29 |
| Number of systemic treatments given, mean (SD) | 1.4 (1.4) | 1.8 (1.5) | 0.75 (1.1) | 1(0) | 0.097 |
| Treatment class | | | | | |
| Oral corticosteroids (CS) | 30 (62.5%) | 20 (66.7%) | 5 (41.7%) | 5 (100%) | 0.02 |
| Intralesional CS | 13 (27.1%) | 9 (30%) | 3 (25%) | 0 | 0.75 |
| Topical CS | 20 (41.7%) | 12 (40%) | 5 (41.7%) | 2 (40%) | 0.92 |
| Tetracycline | 6 (12.5%) | 5 (16.7%) | 1 (8.3%) | 0 | 0.64 |
| Chloroquine | 3 (6.3%) | 3 (10%) | 0 | 0 | 0.57 |
| Hydroxychloroquine | 8 (16.6%) | 8 (26.7%) | 0 | 0 | 0.13 |
| Methotrexate | 6 (12.5%) | 6 (20%) | 0 | 0 | 0.25 |
| Tacrolimus (topical) | 3 (6.3%) | 3 (10%) | 0 | 0 | 0.57 |
| Infliximab | 2 (4.2%) | 2 (6.7%) | 0 | 0 | 0.73 |

*Any treatment where n<2 was excluded from table.

Results

- Of 1,778 search results, 60 case reports/series met inclusion criteria with most studies receiving low quality evidence ratings of ≥ 3 .
- 47 SA and 18 NSA patients were identified (female: 70.8%).
- Black patients comprised the majority (71.1%) of all alopecic subgroups without significant differences in race (p=0.39) or burden of extracutaneous sarcoidosis (71.4%, p=0.32) found between groups.
- Patients with SA were significantly more likely to be female (p <0.001), Black (p <0.001), and have systemic sarcoidosis (p=0.03).
- Patients with SA received a greater number of therapies than those with NSA (2.6 vs 1.8, p=0.29); however, this was not statistically significant.
- Systemic and local corticosteroids were the most reported treatment. Additional therapies for SA included non-corticosteroid immunomodulators and immunosuppressants.

Conclusion

- SA and NSA have a high occurrence among skin of color patients and are associated with a significant burden of systemic involvement.
- Given the high burden of SA among Black women, these patients may require early initiation of immunosuppressive therapy to prevent scarring hair loss.
- Dermatologist should ensure all patients with alopecic sarcoidosis receive thorough evaluation for systemic disease.
- Limitations include low quality evidence and limited reports.

References

- Ezeh N, Caplan A, Rosenbach M, Imadojemu S. Cutaneous Sarcoidosis. *Dermatol Clin* 2023;41:455-70.
- Heath CR, David J, Taylor SC. Sarcoidosis: Are there differences in your skin of color patients? *J Am Acad Dermatol* 2012;66:121.e1-14.
- Baughman RP, Teirstein AS, Judson MA, Rossman MD, Yeager H, Jr., Bresnitz EA et al. Clinical characteristics of patients in a case control study of sarcoidosis. *Am J Respir Crit Care Med* 2001;164:1885-9.
- Rybicki BA, Major M, Popovich J, Jr., Maliarik MJ, Iannuzzi MC. Racial differences in sarcoidosis incidence: a 5-year study in a health maintenance organization. *Am J Epidemiol* 1997;145:234-41.
- Katta R, Nelson B, Chen D, Roenigk H. Sarcoidosis of the scalp: a case series and review of the literature. *J Am Acad Dermatol* 2000;42:690-2.
- House NS, Welsh JP, English JC, 3rd. Sarcoidosis-induced alopecia. *Dermatol Online J* 2012;18:4.
- Oxford Centre for Evidence-Based Medicine: Levels of Evidence (March 2009)2023.