

A Case of Immune Checkpoint Inhibitor-Induced Cicatricial Alopecia

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Introduction

Immune checkpoint inhibitors are monoclonal antibodies that block mediators of tumor-mediated immune evasion by targeting immunologic receptors on the surface of T-lymphocytes. ICIs are reported to cause varying patterns of non-scarring alopecia areata including patchy, diffuse, generalized, and universalis. Here, we present a case of end-stage, complete, scarring alopecia that developed as a result of pembrolizumab use, a feature that has not been reported in the literature previously to our knowledge.

Case Description

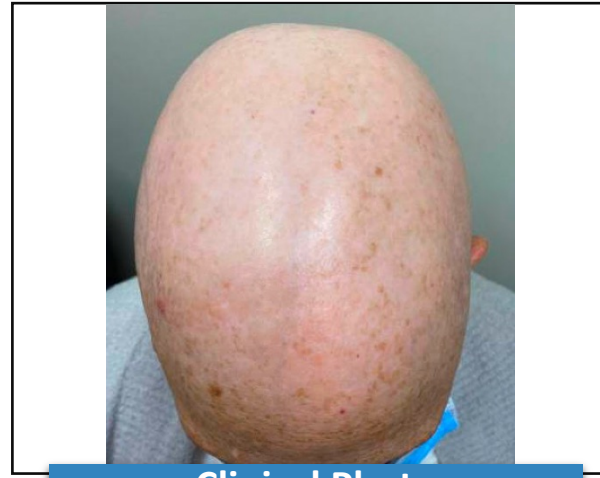
A 52-year-old BRCA+ woman with a history of high grade, triple negative DCIS diagnosed and treated 2.5 years prior presented to the dermatology clinic for evaluation of alopecia.

- Cancer was treated by surgical resection, 6 cycles of docetaxel and cyclophosphamide, and maintained with 9 cycles of pembrolizumab
- After completing chemotherapy, patient had little regrowth of hair for 1.5 months and then experienced recurrent hair loss.
- Developed scalp folliculitis and a rash on her scalp, face, trunk, chest wall, groin, thighs, and legs 8 months after initiating pembrolizumab.
- Failed triamcinolone injections and hair growth had not returned as of 1.5 years after cancer diagnosis

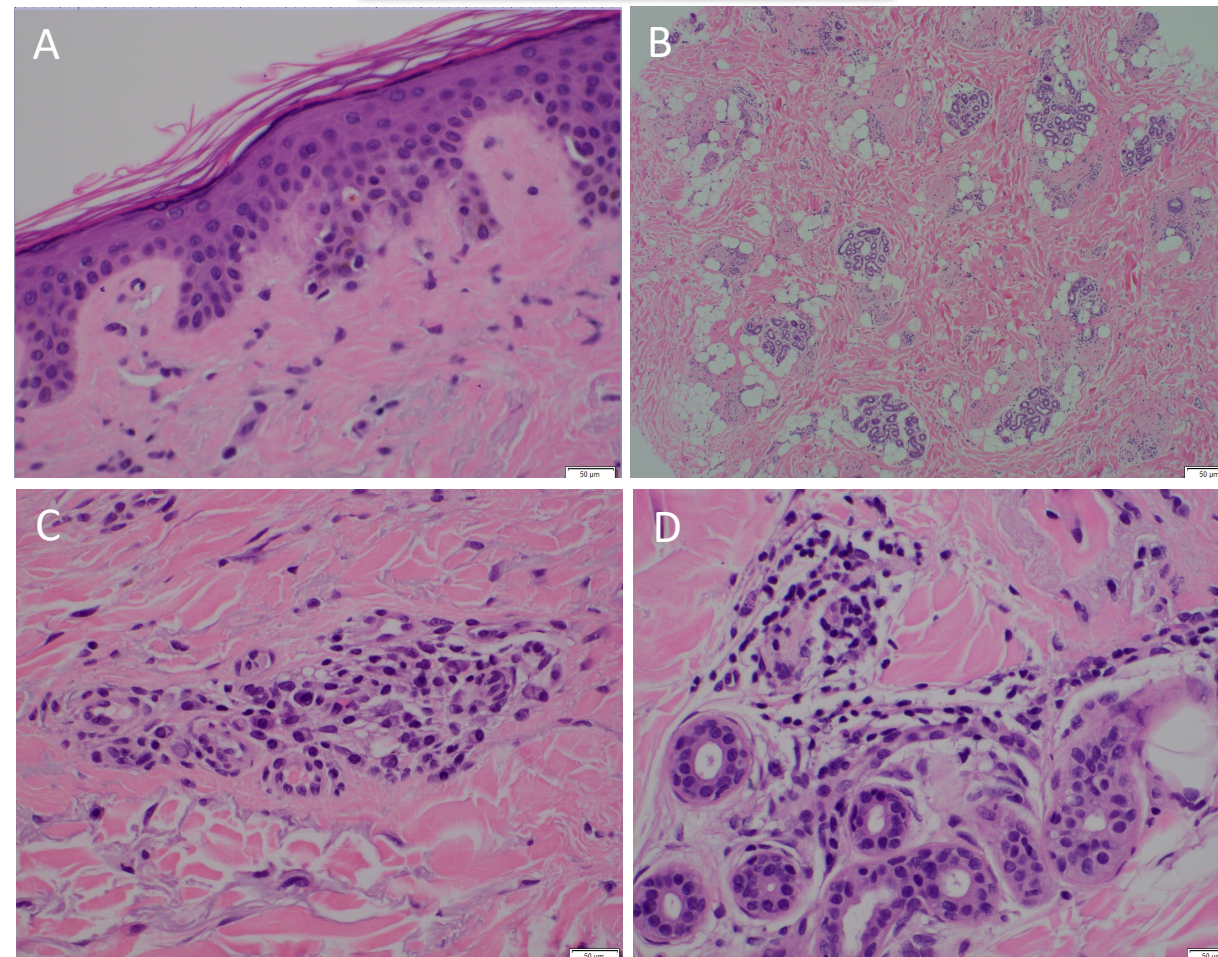
Physical Exam:

- Complete alopecia of the scalp with no apparent follicular openings, erythema, or scale.
- Eyelashes were present, but eyebrows were absent. Scant hair was present in the pubic area and underarms.

Two 4mm punch biopsies for vertical and horizontal histologic slides were obtained.



Clinical Photo



Histologic Findings

Patchy interface change at the dermoepidermal junction (Figure A, horizontal 4x), absent sebaceous glands, no catagen/telogen or anagen hairs (Figure B 40x), and increased dermal mucin. Other findings included focal superficial (Figure C, 40x) and deep lymphoplasmacytic perivascular/peri-adnexal inflammation (Figure D, 40x).

Discussion

Overall, the findings from the clinical exam and punch biopsies were consistent with end-stage scarring alopecia with signs of connective tissue disease or lupus. The patient has not been previously tested for lupus and was counseled that full hair regrowth does not seem possible.

Non-scarring alopecia, lupus, and a subtype of scarring alopecia (lichen planopilaris) have all been associated previously reported with the use of PD-1 inhibitors.¹ Thus far, there has been one reported case of a lupus-like cutaneous eruption following pembrolizumab.² Additionally, there are also 9 reported cases of scarring alopecia (lichen planopilaris, frontal fibrosing alopecia, etc) reported to be associated with the use of immune checkpoint inhibitors.³⁻⁸ However, none of these cases are complete, scarring, and were associated with signs of connective tissue disease

Conclusions

To date, there are no case reports of complete cicatricial alopecia that developed as a result of immune-checkpoint inhibitor use. This case illustrates the potential development of cicatricial alopecia with the use of PD-1 inhibitors, specifically pembrolizumab. Prompt identification of the causative agent can facilitate early intervention and guide future patient counselling.

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