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CASE REPORT

Drug-Associated Giant Cell Arteritis with Scalp Necrosis After Treatment with Pembrolizumab: a Case Report

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Abstract

Giant cell arteritis (GCA) can be a rheumatologic complication of checkpoint inhibitor immunotherapy for the treatment of cancer. A rare and serious manifestation of GCA is scalp necrosis. We report a case of a patient who developed GCA and subsequent scalp necrosis after the initiation of immunotherapy with the checkpoint inhibitor pembrolizumab for the treatment of metastatic melanoma. Such advanced cases of GCA may be increasingly recognized in the immunotherapy era of oncology.

Keywords Giant cell arteritis · GCA · Checkpoint inhibitor · Immunotherapy · Pembrolizumab · Scalp necrosis

Presentation

A 90-year-old male with a history of hypertension was diagnosed with metastatic melanoma and treated with pembrolizumab intravenously every 3 weeks. Nine months after treatment with pembrolizumab, the patient developed jaw claudication, temporal headaches, and bilateral vision loss. Inflammation markers (erythrocyte sedimentation rate and C-reactive protein) were significantly elevated. Biopsies of the bilateral temporal arteries demonstrated moderate to severe inflammatory infiltrates and focal mural calcifications consistent with giant cell arteritis (GCA). The patient was started on high-dose prednisone (60 mg) with a taper; however, he was continued on treatment with pembrolizumab for metastatic melanoma as previously outlined.

Three months thereafter, the patient presented as a new patient to our clinic with a recurrence of headache and jaw claudication. The physical exam at this point was notable for frontal-parietal scalp necrosis (Fig. 1). Based on the timing and distribution of his scalp lesions, we made the diagnosis of scalp necrosis secondary to recurrent GCA as a likely result of an immune-related adverse event from his pembrolizumab treatment. Given the severity of the presentation, we recommended holding pembrolizumab indefinitely. Our patient was resumed on high-dose prednisone (60 mg) with a taper and the addition of tocilizumab 162 mg subcutaneously weekly as a disease-modifying and steroid-sparing agent. He had no further progression of scalp necrosis or recurrence of headaches thereafter. Unfortunately, his vision remained permanently impaired bilaterally.

Discussion

Scalp necrosis is a rare but serious complication of GCA. It signifies a severely active disease [1]. In our case, this patient developed GCA and scalp necrosis as an immune-related adverse event (IRAE) after the use of pembrolizumab, a programmed death (PD)-1 inhibitor. IRAEs have been reported in 70% of patients treated with anti-PD1 immunotherapy [2]. By blocking the PD-1 pathway, checkpoint inhibitors increase T cell proliferation, increasing the patient's susceptibility to autoimmune diseases including GCA. Prophylactic treatment with immunosuppressive agents has not been shown to prevent the incidence of IRAEs [3].

A few cases of GCA have been reported as IRAEs for immunopotentiating treatments such as nivolumab, ipilimumab, and pembrolizumab, but scalp necrosis has only been rarely cited as a complication of GCA associated with immunotherapy. It is important to recognize this unusual cutaneous manifestation of GCA and a possible complication in patients undergoing cancer immunotherapy.

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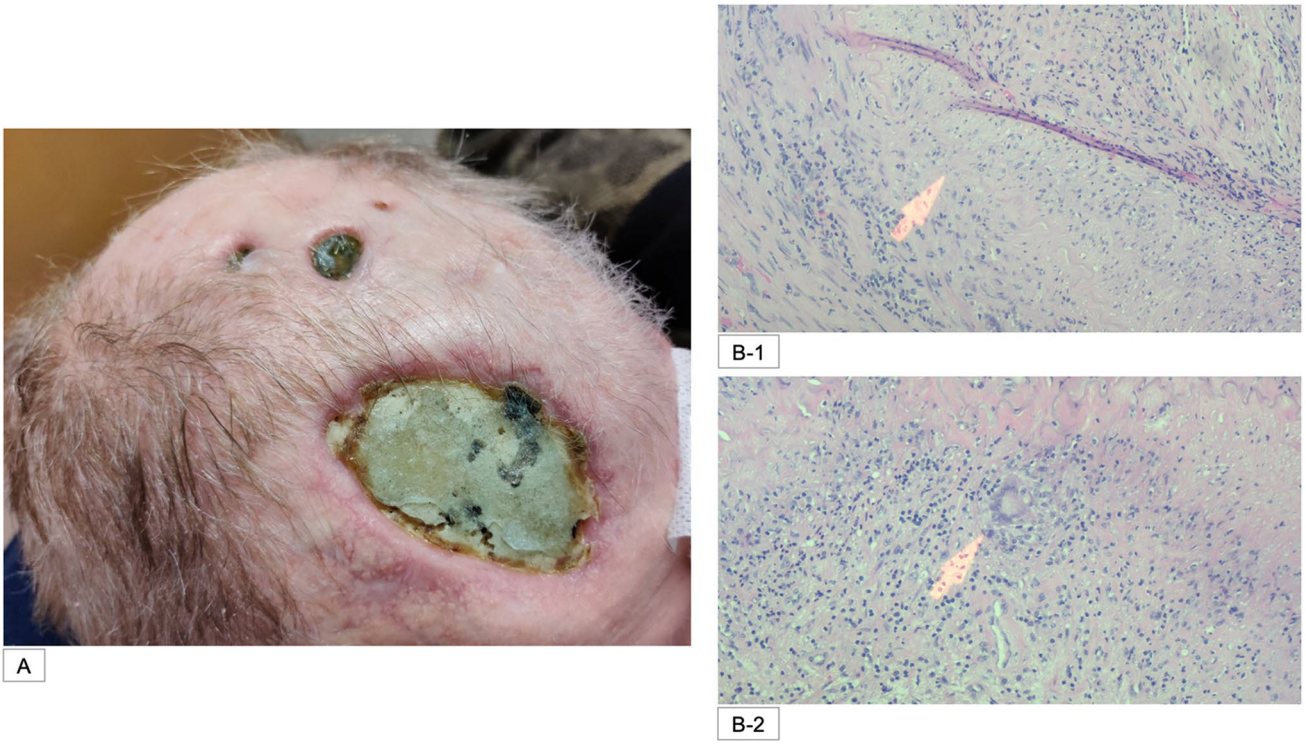

Fig. 1 **A**-10.0x 8.0 cm right frontal-parietal lesion with central necrosis with smallersurrounding lesions; **B**-Abnormaltemporal artery biopsy with features of severe intimal thickening with luminalcompromise (1) and a media expanded by lymphoid infiltrate (2)

Author Contribution All authors contributed equally to the intellectual analysis and drafting of this manuscript.

Data Availability Not applicable.

Code Availability Not applicable.

Declarations

Ethics Approval Not applicable for case report.

Consent to Participate Informed consent was obtained from the patient for the dissemination of the deidentified photographs and discussion of the case for publication and educational purposes.

Consent for Publication Yes, written informed consent was obtained from the patient for this case report for publication.

Conflict of Interest The authors declare no competing interests.

References

1. Nesher G, Berkun Y, Mates M, Baras M, Nesher R, Rubinow A, Sonnenblick M. Risk factors for cranial ischemic complications in giant cell arteritis. Medicine (Baltimore). 2004;83(2):114–22. https://doi.org/10.1097/01.md.0000119761.27564.c9.
2. Stucci S, Palmirotta R, Passarelli A, Silvestris E, Argentiero A, Lanotte L, Acquafredda S, Todisco A, Silvestris F. Immune-related adverse events during anticancer immunotherapy: pathogenesis and management. Oncol Lett. 2017;14(5):5671–80. https://doi.org/10.3892/ol.2017.6919.
3. Weber J, Thompson JA, Hamid O, Minor D, Amin A, Ron I, Ridolfi R, Assi H, Maraveyas A, Berman D, et al. A randomized, double-blind, placebo-controlled, phase II study comparing the tolerability and efficacy of ipilimumab administered with or without prophylactic budesonide in patients with unresectable stage III or IV melanoma. Clin Cancer Res. 2009;15:5591–8. https://doi.org/10.1158/1078-0432.ccr-09-1024.