Paraneoplastic Erytheme Annulare Centrifugum Associated with T-Cell Non-Hodgkin Lymphoma in a 45-Year-Old Filipino Male

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ABSTRACT

Erythema annulare centrifugum (EAC) is a figurate erythema with an unknown pathogenesis, considered a hypersensitivity reaction to various antigens including malignancies. Rarely, EAC in the setting of an underlying paraneoplastic syndrome is termed paraneoplastic erythema annulare centrifugum (PEACE). We report a case of generalized PEACE in a 45-year-old Filipino male with T-cell non-Hodgkin's lymphoma who presented with a widespread intensely pruritic annular erythematous papules and plaques associated with multiple tender lymphadenopathies. Lymph node biopsy was done which revealed T-cell non-Hogdkin lymphoma. Diagnosis was made histopathologically, with typical features of superficial perivascular lymphocytic infiltrates in a coat sleeve pattern. Treatment with systemic corticosteroids and oral antihistamines resulted to significant reduction in pruritus and eventual resolution of lesions.

Keywords: *annular, erythema annulare centrifugum, antifungal, corticosteroid*

INTRODUCTION

Erythema annulare centrifugum (EAC)is an uncommon inflammatory skin disorder typically characterized by expanding annular and arcuate erythematous plaques that clear centrally and sometimes present with a fine scale inside the advancing edges (trailing scale) [1]. Considered as a reactive condition, the pathogenesis for this disease remains unclear however a wide variety of inciting causes have been identified, including exposure to drugs, infections, autoimmune diseases and cancer [2]. In the setting of an underlying malignancy, it is termed as paraneoplastic erythema annulare centrifugum eruption (PEACE) [3]. We report a case of generalized EAC associated with T-cell non-Hodgkin's lymphoma in a Filipino male, investigation of the lesions and cancer work-up eventually led to the diagnosis of PEACE.

CASE REPORT

A 45-year-old Filipino man was referred to the dermatology service who presented with multiple ill to well-defined irregularly shaped annular to polycyclic erythematous papules and plaques topped with thin whitish scales of 1 month duration that started on his chest, abdomen and shoulders (Fig.1). Lesions were associated with extreme pruritus, and in the interim slowly progressed and became more erythematous and generalized affecting his entire body with sparing of the intertriginous areas, the scalp, nails and oral mucosae. Concomitantly the patient experienced significant weight loss of 25kg in a span of one month with sudden onset of cough, colds, sore throat, hoarseness, easy fatigability, orthopnea and night sweats. Physical examination revealed enlarged bilateral tonsils and firm, non-tender lymphadenopathies over the submental, submandibular, suboccipital, axillary and inguinal areas. Four-millimeter punch biopsies taken from erythematous plaques over the abdomen and upper back showed superficial perivascular lymphocytic infiltrates in a coat sleeve pattern (Fig. 2). The patient was treated with clobetasol propionate 0.05% ointment and intravenous diphenhydramine, which provided relief of pruritus and significant improvement of the lesions. Biopsy of a cervical lymph node revealed diffuse distribution of small round cells with scanty cytoplasm & monotonous round dark nuclei. Immunohistochemical stains were also done which showed all cells are immunoreactive to LCA and some cells are reactive for both CD5 and CD20, supporting a diagnosis of Low-grade B-cell lymphoproliferative disorder, such as lymphoma.

DISCUSSION

Erythema annulare centrifugum (EAC) is considered as an uncommon inflammatory hypersensitivity reaction whose pathogenesis is not completely understood [1]. A wide variety of inciting causes have been reported, such as infections, drugs, pregnancy; with the most ominous associations being from malignancies[5]. Paraneoplastic erythema annulare centrifugum eruptions

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are most commonly associated with lymphoproliferative malignancies, specifically lymphoma and leukemia, often preceding the cancer diagnosis[6]. In a retrospective study of 66 patients with EAC, lesions in 48 patients preceded the diagnosis of the associated malignancy [6]. Although the specific pathogenesis for PEACE is unclear, it is postulated that an adequate volume of tumor load is required to produce associated antigens or cytokines that promote the development of the apparent clinical skin lesions[7]. The presentations of EAC may be localized or generalized[4]; however, only a few cases of generalized EAC has been documented.

Clinicopathologic correlation is essential for the diagnosis of EAC since annular eruptions are also seen in several disorders such as mycosis fungoides, subacute cutaneous lupus erythematosus, tinea corporis, Hansen's disease, secondary syphilis, and other figurate erythemas (erythema migrans, erythema marginatum and erythema gyratum repens). The histopathology of EAC is classically defined by dense, tightly cuffed perivascular infiltrates described as a "coat-sleeve", a pattern also encountered in secondary syphilis and tumid lupus erythematosus. However, key findings for these differentials, such as numerous plasma cells and histiocytes typical of syphilis, and increased mucin deposits of mucin seen in tumid lupus were not found in this case [9].

An important differential diagnosis, erythema gyratum repens (EGR), an established paraneoplastic disorder, parallels the clinical and histologic features of PEACE, presenting as a figurate erythema with perivascular infiltrates on biopsy.

Currently, there are no standard guidelines in the treatment of EAC. Common treatments include topical corticosteroids, vitamin D analogs, antifungals and antibiotics. Symptomatic EAC can be treated with antihistamines if there is associated pruritus. Having an established underlying trigger, the management of PEACE is also centered the proper work-up, staging, and subsequent treatment of the underlying malignancy. [11] Nearly all reported cases of PEACE had eventual resolution of the lesions following successful cancer treatment[7] Understanding that an sudden eruption of EAC can be a paraneoplastic phenomenon is critical as it could lead to earlier cancer diagnosis and treatment [8].

CONCLUSION

EAC is a reactive condition to a variety of underlying diseases. Clinically, the lesion resembles other annular erythemas, and clinicopathological correlation is important in making the diagnosis. [8] Paraneoplastic EAC although rare must be considered when encountering annular erythematous plaques especially in the background of possible malignancies. Searching for the underlying condition should be the first step in the management of EAC [7,10]. An important differential is EGR which shows clinicopathologic resemblance to EAC, it is important to clinically distinguish the two as we did in our case.

STATEMENT OF AUTHORSHIP

All authors participated in the data collection and analysis and approved the final version submitted.

AUTHOR DISCLOSURES

All authors declared no conflicts of interest.

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REFERENCES

1. McDaniel, Brianna, and Christopher Cook. "Erythema Annulare Centrifugum." *Nih.gov*, StatPearls Publishing, 27 Aug. 2021, www.ncbi.nlm.nih.gov/books/NBK482494/.
2. Mir, Adnan, et al. "Erythema Annulare Centrifugum." *Dermatology Online Journal*, vol. 18, no. 12, 1 Dec. 2012,escholarship.org/uc/item/1hs6v82m,10.5070/D31hs6v82m.
3. Mu EW, Sanchez M, Mir A, Meehan SA, Pomeranz MK: Paraneoplastic erythema annulare centrifugum eruption (PEACE). Dermatol Online J. 2015, 21:13030.
4. Kim KJ, Chang SE, Choi JH, et al. Clinicopathologic analysis of 66 cases of erythema annulare centrifugum. J Dermatol. 2002;29(2):61-67
5. Yaniv R, et al. Erythema annulare centrifugum as the presenting sign of Hodgkin's disease. Int J Dermatol 1993; 32: 59
6. Thompson, Hannah J., et al. "Paraneoplastic Erythema Annulare Centrifugum Associated with Mycosis Fungoides." *JAAD Case Reports*, vol. 17, 5 Oct. 2021, pp. 65–68, www.ncbi.nlm.nih.gov/pmc/articles/PMC8640728/, 10.1016/j.jdcr.2021.09.027.
7. Chodkiewicz, Hubert M., and Philip R. Cohen. "Paraneoplastic Erythema Annulare Centrifugum Eruption: PEACE." *American Journal of Clinical Dermatology*, vol. 13, no. 4, Aug. 2012, pp. 239–246, 10.2165/11596580-000000000-00000.
8. Pitchford, Chase A, et al. "Paraneoplastic Erythema Annulare Centrifugum Eruption (PEACE) Associated with Metastatic Colorectal Adenocarcinoma." *Cureus*, 2 Oct. 2021, 10.7759/cureus.18443.

9. Weyers W, Diaz-Cascajo C, Weyers I: Erythema annulare centrifugum: results of a clinicopathologic study of 73 patients. Am J Dermatopathol. 2003, 25:451-62. 10.1097/00000372-200312000-00001
10. Honma M, Fujii M, Iinuma S, Komatsu S, Ishida-Yamamoto A, Iizuka H. Erythema annulare centrifugum simulating erythema gyratum repens. The Journal of Dermatology. 2010 Sep 29;38(2):192–3.
11. Batycka-Baran, A, et al. "Erythema Annulare Centrifugum Associated with Ovarian Cancer." *Acta Dermato Venereologica*, vol. 95, no. 8, 2015, pp. 1032–1033, 10.2340/00015555-2138.

Figures

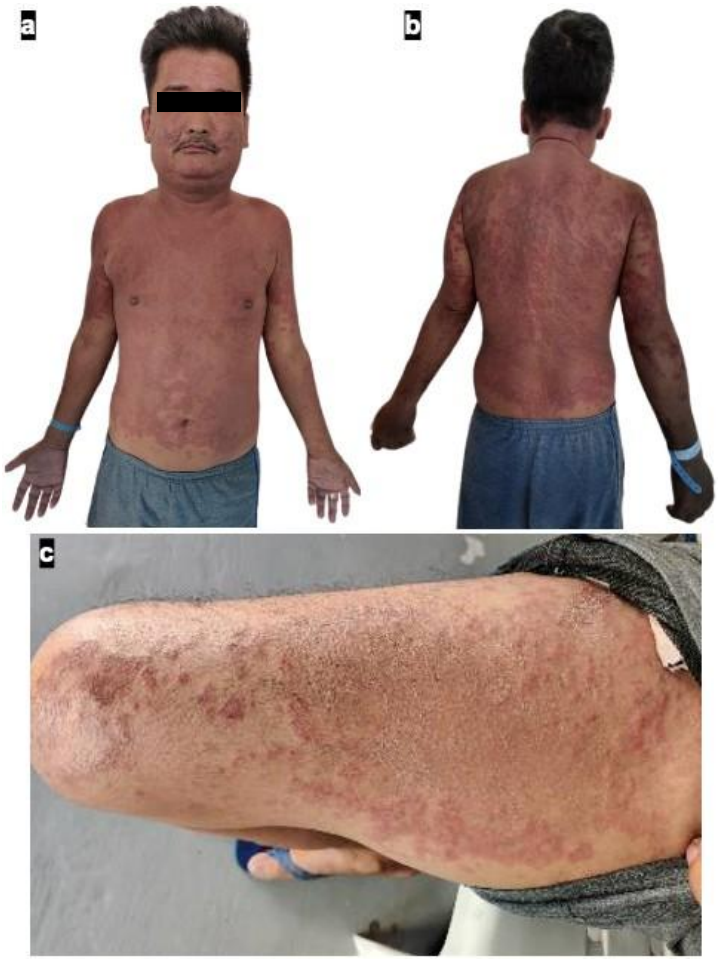

Figure 1. Widespread annular and irregularly-shaped erythematous plaques over the face, trunk, back, bilateral upper and lower extremities (A, B); with fine, thin, whitish scales (C)

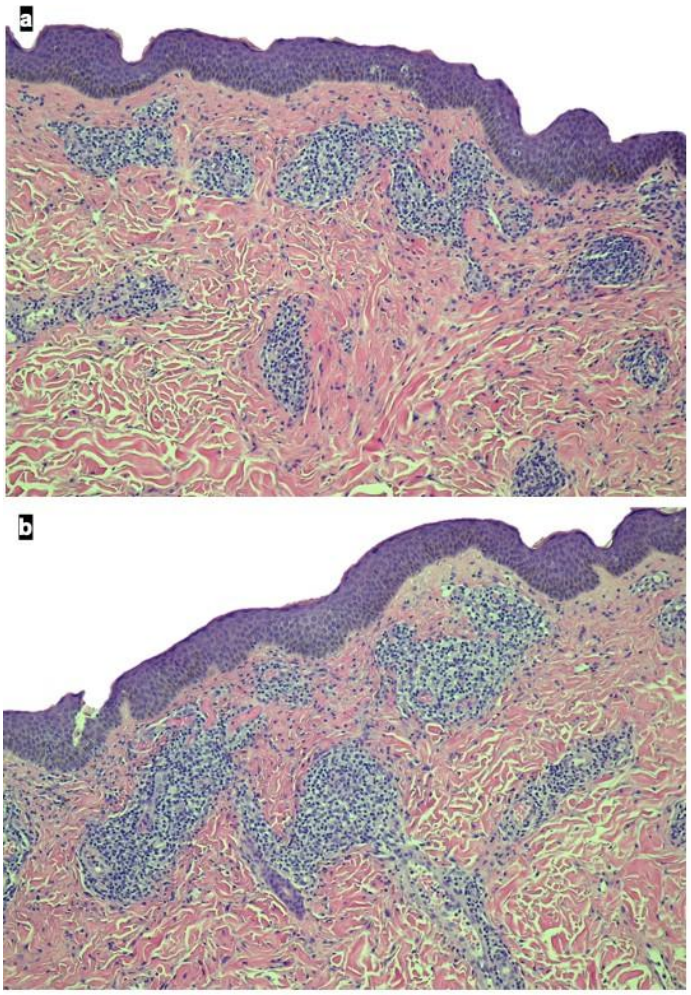

Figure 2. High power (A) and (B) views showing superficial perivascular lymphocytic infiltrates in a coat-sleeve pattern (Hematoxylin & eosin, 40x)