Eccrine Poromatosis: Case Report, Review of the Literature, and Treatment

Tiffany T. Mayo Lauren Kole Boni Elewski

Department of Dermatology, University of Alabama at Birmingham, Birmingham, Ala., USA

Established Facts

- Eccrine poromas are benign tumors of the eccrine sweat duct.
- Multiple eccrine poromas, or eccrine poromatosis, may occur in association with polychemotherapy.

Novel Insights

- We describe the association of eccrine poromatosis with polychemotherapy and discuss therapy options.

Key Words

Eccrine poroma · Eccrine poromatosis · Poromatosis · Polychemotherapy

treatment options of eccrine poromatosis. Herein, we report a case of eccrine poromatosis that developed after 6 cycles of chemotherapy.

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Abstract

Eccrine poromas arise from the intraepidermal region of the eccrine sweat duct and most often occur as a benign solitary tumor. There are few reports of the occurrence of multiple lesions, defined as poromatosis, which may present in patients who have undergone radiotherapy and/or polychemotherapy. We report the case of a 43-year-old male with a history of mantle cell lymphoma who had undergone 6 cycles of polychemotherapy. He presented to the dermatology clinic for multiple painful lesions on his palms and soles. Several biopsies were performed consistent with eccrine poromas. The patient was successfully treated with a combination of excision, imiquimod cream, and cryosurgery. This case adds to the literature regarding the pathogenesis and

Introduction

Eccrine poromas are benign adnexal neoplasms that typically occur as solitary lesions in regions with a high density of sweat glands such as the palms and soles. Though the term ‘eccrine’ poromas has been traditionally used, these lesions may be of either apocrine or eccrine lineage. Clinically, the lesions appear as pink, red, flesh-colored, or blue pigmented papules or nodules with smooth or verrucous surfaces. The occurrence of multiple poromas is exceedingly rare and is referred to as poromatosis. Treatment with surgical excision is often considered optional given the benign course of poromas.

Color version available online

Fig. 1. Erythematous papules on the sole.

Color version available online

Fig. 3. Filiform erythematous papule on the heel.

Color version available online

Fig. 2. Exophytic erythematous papule on the medial foot.

Here, with the patient's consent, we report a case of eccrine poromatosis in a patient with a history of mantle cell lymphoma treated with chemotherapy and autologous stem cell transplantation. We also discuss possible underlying pathogenesis and successful therapy options.

Case Report

A 43-year-old African-American male presented to our clinic for evaluation of 'blisters' on his feet. The patient had a history of mantle cell lymphoma diagnosed in 2009 and treated with 6 cycles of R-HyperCVAD (cyclophosphamide, vincristine, doxorubicin,

dexamethasone, followed by methotrexate and cytarabine). He subsequently received an autologous stem cell transplant in 2010, with a pre-transplant regimen that consisted of busulfan, cytoxan, and etoposide. Prior to the diagnosis of mantle cell lymphoma, the patient states he was otherwise healthy. He was a marine stationed in Okinawa, Japan before diagnosis. He currently works as a truck driver. The patient has been in remission from lymphoma for the past 4 years.

The patient reported that he first developed the lesions on his feet 2 years prior to presentation. These began as small 'red pin-point' papules that would grow and become painful until extrusion of the core. The patient was concerned about the more recent lesions, which were persistent, growing, and thus painful with ambulation.

Physical exam revealed 16 flesh-colored filiform and verrucous papules containing dilated vessels on the bilateral plantar feet, and scattered pink papules on the hands and arms (fig. 1–3). Shave biopsies of several lesions were histologically consistent with eccrine poromas.

Four of the largest lesions were treated with excision. The remaining poromas were treated with imiquimod 5% cream 5 days weekly. Within 10 months, the patient noted resolution of approximately 6 lesions on the palms and soles and reported a decrease in size of the remaining lesions. He also stated that pain with walking had subsided. However, the patient reported continued development of new poromas, which resolved after cryosurgery ablation.

Discussion

Eccrine poromatosis was first described by Goldner [1] in 1970. The pathophysiology of this phenomenon is not well understood. Of the 18 reports of poromatosis since 1970 (table 1), 13 cases have occurred in patients who have undergone radiation and chemotherapy, and 6 occurred in patients treated with chemotherapy without

Table 1. Reported cases of eccrine poromatosis

Authors [Ref.], year; location	Age	Sex	Disease	Disease treatment	Number and location of poromas	Poroma treatment	Other notes
Goldner [1], 1970; Baltimore, Md., USA	65	F	n/a	n/a	>100: palm and soles	systemic antibiotics and topical corticosteroids	treatment unsuccessful
Ogino [11], 1976; Kyoto, Japan	44	F	n/a	n/a	unknown: legs	none	S2 dermatomal distribution
Wilkinson et al. [12], 1977; Huntingdon, Que., Canada	44	F	hidrotic ectodermal dysplasia	n/a	unknown: legs, ankles, forearms	none	
Ullah et al. [13], 1989; Innsbruck, Austria	70	M	osteomyelitis	X-ray therapy (no data on type and dose)	7: calf, ankle, lateral foot	excision	
Kurokawa et al. [14], 2001; Myazaki, Japan	72	M	mycosis fungoides	electron beam irradiation	14: thigh, lumbus, shoulder, buttock		
Mahlberg et al. [7], 2006; Philadelphia, Pa., USA	42	M	ALL	total body irradiation, PUVA, allogenic BMT	14: palms and soles		
Navi et al. [2], 2009; Davis, Calif., USA	64	M	non-Hodgkin's lymphoma	R-CHOP	7: ankle, chest, eyelid, forearm	excision	
Diamantis et al. [3], 2010; Austin, Tex., USA	53	M	mantle cell lymphoma	allogenic SCT, tacrolimus, photopheresis, corticosteroids, mycophenolate mofetil	6: palms, heels, elbow	excision	lesions positive for HPV 21, 22, 23
Fujii et al. [4], 2012; Okayama, Japan	66	F	CLL; follicular lymphoma	CLL: cyclophosphamide and other chemotherapeutic regimens; follicular lymphoma: various chemotherapy regimens; radiation (30 Gy)	19: forearm, hip, abdomen	n/a	occurred 16 years after CLL diagnosis
	62	M	malignant fibrous histiocytoma	doxorubicin, ifosfamide; radiotherapy (63 Gy)	lower leg, heel, sole	excision	

AML = Acute myeloid leukemia; ALL = acute lymphoblastic leukemia; BMT = bone marrow transplant; CLL = chronic lymphocytic leukemia; SCT = stem cell transplant; CHOP = cyclophosphamide, doxorubicin, vincristine, prednisone; R-CHOP = rituximab, cyclophosphamide, doxorubicin, vincristine, prednisone; M-CHOP = methotrexate, cyclophosphamide, doxorubicin, vincristine, prednisone.

radiation. To our knowledge, our case is the 7th case of eccrine poromatosis in patients treated with chemotherapy without radiation. These patients have all been males between the ages of 25–72 years and treated with various chemotherapy preparations. Lymphohematopoietic disorders have included non-Hodgkin's lymphoma, B-cell lymphoma, and acute myeloid leukemia. The time frame of poroma development has ranged from onset during chemotherapy treatment to 10 years following therapy.

Navi et al. [2] reported the case of a 64-year-old male with a history of non-Hodgkin's lymphoma after chemotherapy with CHOP and Rituxan with 8 total poromas on the chest, ankle, eyelid, and arm that had been present for several months. All lesions were treated with complete excision.

Diamantis et al. [3] reported another case involving a 53-year-old male with a history of mantle cell lymphoma treated with allogeneic stem cell transplant. This patient later developed graft-versus-host disease treated with

photopheresis, tacrolimus, corticosteroids, and mycophenolate mofetil. He subsequently developed 6 poromas involving the palm, heel, and elbow. Interestingly these lesions were found to be positive for human papillomavirus types 20, 21, and 23.

Fujii et al. [4] discussed 4 cases of poromatosis, 2 of which occurred in patients who had never received radiation therapy. One case described a 59-year-old Japanese male with a history of malignant B-cell lymphoma who, along with surgical resection, received 5 courses of combination chemotherapy. During the final course of chemotherapy, the patient developed a single poroma on the palm, which was surgically removed. One and a half years later, new poromas developed on his hands and sole and were eventually resected. The final case involved a 72-year-old Japanese male with diffuse large B-cell lymphoma who developed poromatosis 10 years following 7 courses of combination chemotherapy with CHOP and 12 courses of etoposide.

Next, Nguyen et al. [5] described a 25-year-old male with acute myelogenous leukemia who had undergone autologous bone marrow transplantation with adjuvant chemotherapy and developed 8 poromas involving the foot, soles, and heels.

Most recently, Garshick et al. [6] reported the case of a 46-year-old male with a history of acute myelogenous leukemia who had undergone treatment with cytarabine, danorubicin, and etoposide and autologous stem cell transplant. Evaluation revealed 22 poromas on the palms and soles.

The exact mechanism of poromatosis development is unknown. Previous case reports involving chemotherapy-induced dermatoses have suggested a direct sweat duct cytotoxicity from toxic chemotherapy metabolites, and recently, authors have suggested a possible remodeling of the sweat gland apparatus after chemotherapy [4]. Others have proposed a genetic predisposition in the form of a tumor suppressor gene defect [7]. Similarly, there may be a possible geographic association, as 8 of the 18 previously reported cases are from Japan, though the ethnicity of these patients was not explicitly stated in these cases. We agree that the etiology likely lies in sweat duct cytotoxicity. Interestingly, the development of poromas is often delayed for several years, even decades in many patients. Also, the question arises whether cytotoxicity and remodeling of the sweat duct is permanent, given the appearance of multiple new lesions, as in our patient.

Poromas on acral surfaces may cause pain, necessitating treatment. Also, a recent article suggests that the ma-

lignant transformation rate from eccrine poroma to porocarcinoma is 18% [8]. Excision is typically the treatment of choice, but cryosurgery has also been used successfully [9]. Jo et al. [10] reported a case of imiquimod 5% cream to treat a poroma, resulting in clearance within 4 weeks. In our case, along with surgical excision and cryotherapy, imiquimod was successfully used to treat poromas, resulting in decreased size and/or resolution of the treated lesion.

Conclusion

Poromatosis is a rare condition with 19 reported cases to date, including our case. There is a clear association with chemotherapy likely resulting from chemotherapy-induced sweat duct alterations. Traditional therapy options have included excision and cryotherapy; however, imiquimod is a promising treatment alternative for eccrine poromatosis.

Statement of Ethics

Consent was provided by the subject.

Disclosure Statement

There are no conflicts of interest to disclose.

References

- 1 Goldner R: Eccrine poromatosis. *Arch Dermatol* 1970;101:606–608.
- 2 Navi D, Fung M, Lynch PJ: Poromatosis: the occurrence of multiple eccrine poromas. *Dermatol Online J* 2008;14:3.
- 3 Diamantis ML, et al: Detection of human papillomavirus in multiple eccrine poromas in a patient with chronic graft-vs-host disease and immunosuppression. *Arch Dermatol* 2011;147:120–122.
- 4 Fujii K, et al: Eccrine poromatosis associated with polychemotherapy. *Acta Derm Venereol* 2012;92:687–690.
- 5 Nguyen BT, Lortscher DN, Lee RA: Multiple poromas in a bone marrow transplant recipient: a case report. *Dermatol Online J* 2012;18:9.
- 6 Garshick M, et al: Eccrine poromatosis in a patient with acute myeloid leukemia following chemotherapy. *Dermatol Online J* 2014;20:11.
- 7 Mahlberg MJ, et al: Multiple eccrine poromas in the setting of total body irradiation and immunosuppression. *J Am Acad Dermatol* 2006;55(2 suppl):S46–S49.
- 8 Robson A, et al: Eccrine porocarcinoma (malignant eccrine poroma): a clinicopathologic study of 69 cases. *Am J Surg Pathol* 2001;25:710–720.
- 9 North JP, Lo J, Landers M: Poromatosis in pregnancy: a case of 8 eruptive poromas in the third trimester. *Cutis* 2012;89:81–83.
- 10 Jo JH, et al: A case of eccrine poroma treated with 5% imiquimod cream. *J Dermatol* 2005;32:691–693.
- 11 Ogino A: Linear eccrine poroma. *Arch Dermatol* 1976;112:841–844.
- 12 Wilkinson RD, Schopf P, Rozenfeld M: Hidrotic ectodermal dysplasia with diffuse eccrine poromatosis. *Arch Dermatol* 1977;113:472–476.
- 13 Ullah K, Pichler E, Fritsch P: Multiple eccrine poromas arising in chronic radiation dermatitis. *Acta Derm Venereol* 1989;69:70–73.
- 14 Kurokawa M, Amano M, Miyaguni H, Tateyama S, Ogata K, Idemori M, Setoyama M: Eccrine poromas in a patient with mycosis fungoides treated with electron beam therapy. *Br J Dermatol* 2001;145:830–833.