Eccrine Poromatosis: Case Report and Literature Review

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ABSTRACT:

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Eccrine poromas are benign adnexal neoplasm which usually present with a solitary lesion on palms and soles. Rarely, multiple eccrine poromas can occur, defined as eccrine poromatosis, which were reported after radiotherapy and/or chemotherapy. We report the case of 56 years old woman with left breast cancer stage T2N2M0 status post left breast conservative surgery with sentinel lymph node dissection and chemotherapy with radiation therapy 9 years ago. She complained of painless erythematous papules at her left breast and left thigh for 1 year. Excisional biopsies for two lesions were done. The histopathology results confirmed the diagnosis of eccrine poromatosis.

Key words: breast cancer, chemotherapy, eccrine poromatosis, radiotherapy

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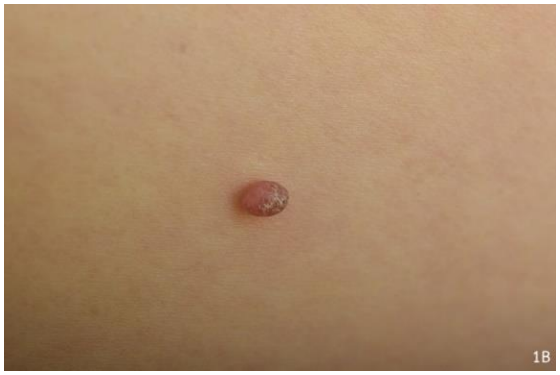
Introduction

Eccrine poromas are benign adnexal tumors which can be derived from eccrine or apocrine lineage[1]. They are typically found in middle aged and elderly patients[1]. Clinically, the lesions appear as a solitary skin color to erythematous or pigmented papules plaques or nodules and sometimes surrounded by an epidermal rim. They mostly locate on acral surfaces[1-2]. Multiple eccrine poromas (eccrine poromatosis) are very rare. There are few reports of eccrine poromatosis following chemotherapy and/or radiation therapy. Excision is a standard treatment due to the potential of malignant transformation[2,3]. We report a case of multiple eccrine poromas in the patient with breast cancer who received concurrent chemoradiotherapy and we also review literature of eccrine poromatosis and discuss underlying pathogenesis and therapeutic options.

Our case

A 56-year-old Thai female presented with two painless lesions at left chest wall and left thigh for 2 years. Her underlying disease was intraductal carcinoma of left breast with left axillar node metastasis the staging was T2N2M0. She got left breast conservative surgery with sentinel lymph node dissection then 4 cycles of doxorubicin and cyclophosphamide then 12 cycles of paclitaxel with completion of radiation courses in 2013 followed with 5 years of tamoxifen (2014-2018) and then anastrozole since 2018 till now. Her latest mammogram and ultrasonography screening at 2021 found no malignancy. Her other medical history was pituitary macroadenoma presented with bitemporal hemianopia status post craniectomy with tumor removal and optic nerve decompression in 2014 with secondary hypothyroidism and secondary hypogonadism and dyslipidemia. She denied history of trauma. She denied food and drug allergy. None of her family members have similar symptom. Her current medication was anastrozole 1 mg/day, levothyroxine 600 mcg/week and simvastatin 20 mg/day. Physical examination revealed two of painless erythematous papules with verrucous surface and scale at left breast and left thigh, respectively (Figure 1). No chronic radiation dermatitis of her chest wall was observed. The other physical examination was unremarkable. Shave biopsy was performed on two lesions the histopathological revealed circumscribed proliferations of small, monomorphic, basophilic cuboidal keratinocytes continuity from the epidermis into the dermis accompanying with a loose hyalinized and vascularized stroma (Figure 2). High power sections showed several ductal lumens lined with eosinophilic cuticles (Figure 3). The finding was compatible with eccrine poroma. At 5 months follow up, she had no new lesion developed.



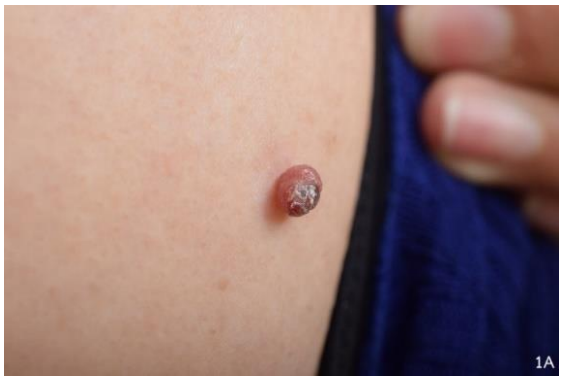
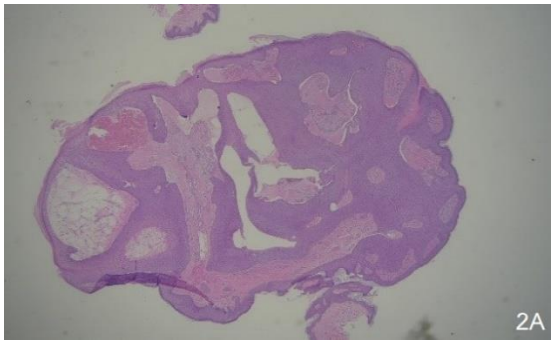


Figure 1 A, B Painless erythematous papules with verrucous surface and scale at left breast and left thigh, respectively



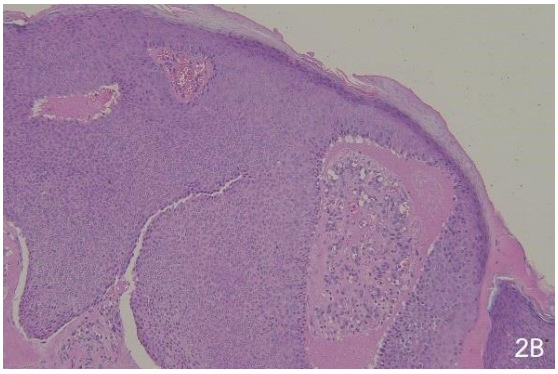


Figure 2 A, B Shave biopsy showed circumscribed proliferations of small, monomorphic, basophilic cuboidal keratinocytes continuity from the epidermis into the dermis accompanying with a loose hyalinized and vascularized stroma, A, H&E x40, B, H&E x100

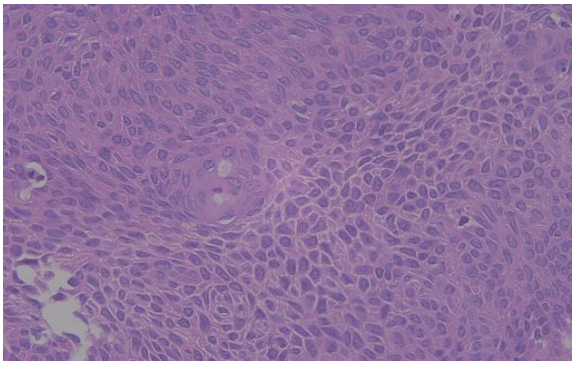


Figure 3 High power sections show several ductal lumens lined with eosinophilic cuticles, H&E x400

Discussion

Eccrine poromatosis was first described by Goldner in 1970[4]. He discovered multiple eccrine poromas. The causative is still not well clarified. In many reports found variety of possible factor include radiation therapy, chemotherapy,

pregnancy[5] and viral infection[1] (human papillomavirus). From a review of literature, many reports show that radiation can trigger eccrine poromatosis in radiation site. Ullah et al. reported 7 eccrine poromas developed on chronic radiation dermatitis site after radiation therapy of osteomyelitis on right lower extremity[6]. Kurokawa et al. described patient with mycosis fungoides received whole body electron beam irradiation then 14 lesions of eccrine poromas developed on his trunk and extremities[7]. These findings suggested that radiation may trigger eccrine poromas which confined in radiation site. Same as our patient, one lesion of eccrine poroma developed on her breast radiation field (left breast). However, there were some reports of eccrine poromatosis that associated with radiation therapy but developed on non-irradiation site. Mahlberg et al. reported patient with acute lymphoblastic leukemia and post allogenic BMT with GVHD received chemotherapy, total body irradiation, PUVA therapy, cyclosporine and methylprednisone developed 14 of eccrine poromas on distal extremities, primarily on palms and left sole[8]. The authors proposed that eccrine poromas developed mostly on acral area due to high concentration of eccrine ducts at palms and soles. Lim et al. described right breast cancer patient undergone mastectomy and 6 cycles of 5-fluorouracil, epirubicin, cyclophosphamide plus Letrazole[9]. Five years later she developed a non-resectable right infraclavicular fossa recurrence then started 6 courses of weekly paclitaxel, trastuzumab and pertuzumab then tamoxifen for 5 years. Post resection radiotherapy to the right chest wall, axilla and supraclavicular fossa was done. More than 18 of eccrine poromas developed on left leg, left breast, left clavicular region, left arm, right forearm, right face and scalp[9]. It is possible that patient who received polychemotherapy, eccrine poromas frequently developed on non-irradiated skin possibly explained left thigh lesion of our patient. In addition, patient who received only chemotherapy can developed eccrine poromatosis as well[2,10-11]. From review literature (Table 1.), most cases of neoplasm that received chemoradiation were hematologic malignancies[1-2,7-8,10-11] with some solid cancers similar to this report[3,9]. Cyclophosphamide, vincristine, and doxorubicin have been frequently reported[3]. The times of poromas to developed have been varied from during chemotherapy/ radiation therapy to decades later. Previous report proposed that chemotherapeutic metabolites can cause direct cytotoxic and stimulated remodeling and/or regeneration in eccrine sweat glands which results in lesions occur after chemotherapy for a decade[11]. The pathogenesis of multiple eccrine poromas occurs after radiation therapy is unclear but immunosuppressive effect is hypothesized[12]. Genetic predisposing with tumor suppressor gene

defect has been proposed[8]. Our patient had received tamoxifen for 1 year prior to development of multiple eccrine poromas. Tamoxifen is mixed antiestrogen effect to breast tissue and estrogenic effect to other tissues. The role of tamoxifen on eccrine poromatosis is uncertain. However, eccrine poromatosis found in pregnant women can be relate to the hormonal effect[5]. No report has been found regarding the causative effects of anastrozole on eccrine poromatosis.

Table 1 Reported Cases of Eccrine Poromatosis Associated with Malignancy

No	Authors (yr)	Sex	Age (yr)	Disease	Disease treatment	Number: location of poromas	Poroma treatment
1	Kurokawa et al.[7] (2001)	M	72	Mycosis fungoides	Whole body (except head) and regional electron beam irradiation, intravenous interferon-γ1a	14: Trunk, arm, leg, thigh, buttock, inguinal, left breast	Excision and observe
2	Mahlberg et al.[8] (2006)	M	42	ALL	Chemotherapy, total body irradiation, allogeneic BMT, psoralen plus UVA radiation, cyclosporine and methylprednisone	14: Distal extremities, primarily palms and left sole	Shave biopsy
3	Navi et al.[10] (2008)	M	64	Non-Hodgkin's lymphoma with history of colorectal cancer	R-CHOP	7: Chest, left nipple, eyelid, left forearm, left ankle	Shave biopsy and complete excision
4	Fujii et al.[11] (2012)	F	66	- CLL - Follicular lymphoma of B-cell type	CLL: cyclophosphamide and "other chemotherapeutic regimens" Follicular lymphoma: epirubicin, vincristine, mitoxantrone, cyclophosphamide, methotrexate, prednisolone, etoposide, cisplatin and "unidentified regimens", surgical resection and radiation therapy to right eyelid (30 Gy)	>19: Both thighs, left forearm, hip, lower abdomen	N/A
	Fujii et al.[11] (2012)	M	62	Malignant fibrous histiocytoma (right thigh)	Wide resection, doxorubicin, ifosfamide and radiation therapy to right leg (63 Gy)	3: Left lower leg, right heel, right sole	Excisional biopsy
	Fujii et al.[11] (2012)	M	72	Diffuse large B-cell lymphoma	CHOP and etoposide	>5: Back, right thigh, right knee, trunk, extremities	Excisional biopsy

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No	Authors (yr)	Sex	Age (yr)	Disease	Disease treatment	Number: location of poromas	Poroma treatment
5	Miura et al.[12] (2013)	F	72	Nasolacrimal duct adenocarcinoma	Radical excision and post operative radiation therapy	11: Abdomen, trunk, neck, extremities	Surgical removal
6	Mayo et al.[2] (2015)	M	43	Mantle cell lymphoma	R-HyperCVAD, methotrexate, cytarabine, busulfan, etoposide and autologous stem cell transplant	16: Both plantar of feet, hands, arms	Excision to four lesions, imiquimod 5% cream, cryosurgery ablation
7	Lim et al.[9] (2018)	F	63	Metastatic right breast cancer	Mastectomy, 5-fluorouracil, epirubicin, cyclophosphamide, letrozole, paclitaxel, trastuzumab, pertuzumab, tamoxifen, resection of right infraclavicular mass and radiation therapy to right chest wall, axilla and supraclavicular fossa	>18: Left thigh, left buttock, left breast, left clavicular region, left hand and fingers, left forearm, left lateral neck, right arm, right temple, right face, scalp	Shave excision
8	Choi et al.[3] (2020)	M	54	Stomach cancer	Surgery and adjuvant chemotherapy	6: Trunk, extremities	Punch biopsies with complete removal

ALL; acute lymphoblastic leukemia, BMT; bone marrow transplant, CLL; chronic lymphocytic leukemia, CHOP; cyclophosphamide, doxorubicin, vincristine, prednisone, R-CHOP; rituximab, cyclophosphamide, doxorubicin, vincristine, prednisone, M-CHOP; methotrexate, cyclophosphamide, doxorubicin, vincristine, prednisone, R-HyperCVAD; rituximab, cyclophosphamide, vincristine, doxorubicin, dexamethasone

Eccrine poromas have 18% of malignant transformation to porocarcinoma[2]. Excision is preferred[2,3]. Electrosurgical destruction, cryotherapy and 5% imiquimod cream have been reported with successful outcome as alternative treatments[3]. Our patient received shave biopsies for 2 lesions. The five months follow up showed no recurrence.

We report the case of multiple eccrine poromas in breast cancer patient received chemoradiation therapy and hormonal therapy which successfully treated by surgical excision. From literature reviews show chemotherapy and/or radiation therapy may be trigger factors of multiple eccrine poromas in our case.

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