Case Report

Co-Existence of Porokeratosis Variants Concurrent with Bowen's Disease: Two Rare Cases Report

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Coexisting variants of porokeratosis rarely occurs. Disseminated superficial porokeratosis (DSP) is characterized by multiple uniform small annular papules distributed all over body. DSP commonly coexist with linear porokeratosis (LP), but it is uncommon for DSP to coexist with porokeratosis of Mibelli (PM). PM presents with central atrophic erythematous plaques and thread-like elevated border. It occurs mainly on extremities. Although malignant transformation can be found in the porokeratosis, there is still no report case of coexisting variants of porokeratosis concurrent with Bowen's disease. The clinical and histopathologic finding of rare coexisting variants of porokeratosis (PM and DSP) concurrent with squamous dysplasia is described.

Keywords: *Porokeratosis of Mibelli, Disseminated superficial porokeratosis, Bowen's disease*

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Porokeratosis is a disorder of stratified squamous keratinization, which is characterized by hyperkeratotic papules and plaques with thread-like elevated border. The variants of porokeratosis are usually classified according to clinical presentation and lesion location. Six commonly found in clinical variants of porokeratosis are porokeratosis of Mibelli (PM), disseminated superficial actinic porokeratosis (DSAP), disseminated superficial porokeratosis (DSP), porokeratosis palmaris et disseminate (PPPD), punctuate porokeratosis (PP), and linear porokeratosis (LP). The coexistence variants in an individual are rarely reported. There was a report showing that it may be related to genetic heterogeneity[1]. However, the exact cause is still unknown. Malignant alteration can occur within lesion of porokeratosis. The increasing of p53, a tumor suppressor gene in all types of porokeratosis may be involved in pathogenesis of porokeratosis and malignant transformation in some lesions[2].

The authors describe two cases of patients who had coexistence of PM and DSP, which is an unusual coexisted variant and concurrent with squamous dysplasia.

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Case Report

Patient 1

A 61-year-old male patient presented with a symptomatic multiple lesions on both arms, chest, and back for 10 years. The size of the lesion was stable but increased in number. He had underlying hypertension and well controlled by irbesartan. None of his family member has the similar symptom.

Physical examination revealed numerous small erythematous annular central atrophic and raised border papules sized 0.2 to 1 cm in diameter on both arms, upper back and chest (Fig. 1A). There was a large solitary well-defined erythematous hyperkeratotic border with central atrophic plaque sized 2.5 cm in diameter on back (Fig. 1B). Palm and soles, nails and mucous membrane were spared.

Three histological examinations from chest wall, back, and right forearm were obtained. The

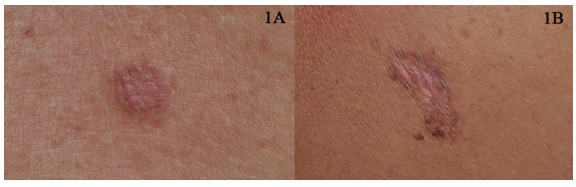

Fig. 1 Patient1 with numerous small erythematous central atrophic and raised border papules on chest (A) and solitary large well defined erythematous central atrophic plaque with thread-like elevated border on back (B).

histopathology from chest wall showed cornoid lamella with focal hypogranulosis, basal vacuolization, focal lichenoid infiltration of lymphocyte, and revealed few atypical keratinocytes (Fig. 2A). The biopsy from back and right forearm exhibited cornoid lamella, which varies in size with focal lichenoid infiltration of lymphocyte (Fig. 2B). The lesion from chest wall was diagnosed of DSP with squamous transformation. The lesion from back and right forearm were diagnosed of PM and DSP, respectively.

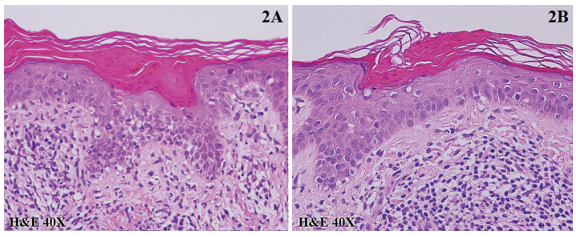

Fig. 2 Biopsy from chest wall of patient1 revealed few atypical keratinocytes (A). Histology from back of patient1 revealed cornoid lamella and focal lichenoid infiltration of lymphocyte (B).

Patient 2

A 68-year-old male patient, who had medical history of type 2 diabetic mellitus, hypertension, and coronary artery disease, came with longstanding rash on his scalp, chest, back, and all extremities for 10 years. The patient's family did not exhibit similar symptom. He denied any history of herbal medication.

Physical examination showed multiple well defined small brownish annular central atrophic with elevated border papules sized vary from 0.5 to 1 cm in diameter on scalp, chest, trunk, back, and all extremities (Fig. 3A). There were numerous well defined erythematous hyperkeratotic round shaped plaques with some peripheral elevated border sized 1 to 3 cm in diameter on dorsum of both hands, right arm, and both thighs (Fig. 3B-D). Palm and soles, nails, and mucous membrane were not affected.

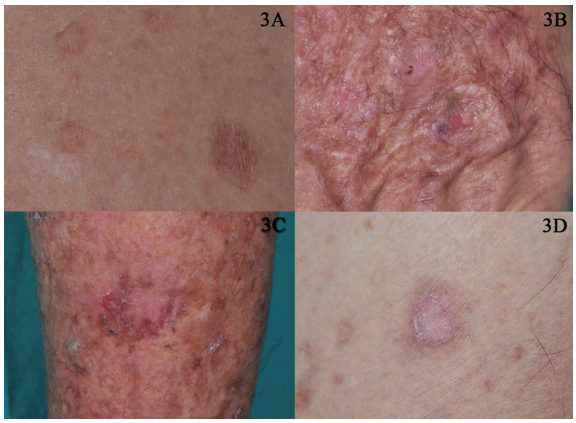

Fig. 3 Patient 2 with multiple brown annular central atrophic hypopigmentation with elevated border papules onchest (A) and numerous erythematous hyperkeratotic plaques with some peripheral elevated border on dorsum of left hand, right arm, and left thigh (B, C, D).

The authors performed four skin biopsies from dorsum of left hand, right forearm, and both thighs. Histological examination from dorsum of left hand displayed Bowen's disease with free margin (Fig. 4A). The tissue biopsy from right forearm revealed actinic keratosis (Fig. 4B). The tissue from left thigh presented feature of lichen simplex chronicus. The last histology from right thigh showed feature of classic porokeratosis. Finally, a diagnosis of PM coexistence with DSP, Bowen's disease, and Actinic keratosis was made.

He was treated with cryotherapy for porokeratosis and actinic keratosis. The lichen simplex chronicus was treated with keratolytic agent and moderate potency steroid.

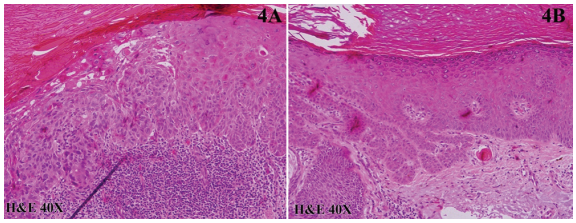

Fig. 4 Biopsy from dorsum of left hand of patient 2 showed Bowen's disease (A). The tissue biopsy from right arm showed actinic keratosis (B).

Discussion

Porokeratosis is a genetic disorder of abnormal epithelization of the skin. Although this disorder was discovered more than a century ago, the pathogenesis is still doubtful. Some physician proposed the concept of abnormal clones in epidermal cell[3], while some proposed that the mutated-keratinocyte associated with increasing level of p53 in cornoid lamella which was detected by immunohistochemistry[2]. P53 is directly affected by ultraviolet (UV) exposure. Furthermore, the fibroblast cultured from porokeratosis patient who exposed to X-ray radiation shows chromosomal instability[4]. Hence, the malignancy transformation in porokeratosis is related to p53 gene mutation, UV exposure, and X-ray radiation.

The diagnosis of porokeratosis is made by clinical of hyperkeratotic thread-like elevated border papules and plaque. Histopathology was confirmed by a hallmark, cornoid lamella, in all forms of porokeratosis. The classification of porokeratosis depends on clinical and location. The classic PM begins during infancy or childhood as small brown to skin colored keratotic papules and gradually enlarges to form plaques, involving on the extremities. Then, the border of the lesion will become prominent showing elevated thread-like and the center of lesion will become atrophy. The DSP is characterized by multiple uniform small annular papules ranging between 2 and 5 mm in diameter, distribute on whole body.

The coexistence variants of more than one type are uncommon. There were about 25 case reports in English medical literature[5]. The most common type that occurs together is LP and DSAP or LP with DSP[6]. Only one case has been reported with PM co-existing with DSP[7], which is similar to our two patients. Therefore, our cases are the second and third cases that presented the PM co-existence with DSP. Moreover, there is still no report in long-term follow-up study of malignancy transformation risk in coexisting variants of porokeratosis.

The incidence of malignancy arising within porokeratosis is about 7 to 10%[8]. The common cancer are squamous cell carcinoma, Bowen's disease, actinic keratosis, and basal cell carcinoma[8]. The risk for malignant transformation has been found in large size, long-standing lesion, old-aged patient, linear subtype, and history of radiotherapy[9]. Increasing of p53 in all types of porokeratosis is associated with keratinocyte mutation. Moreover, X-ray radiation and UV exposure may related to malignant transformation[4]. In our cases, the squamous dysplasia were found together with the coexisting variants of porokeratosis, that never been report in the literature.

Treatment of porokeratosis depends on size, number of lesion, and location. The first line of treatment is photoprotection, 5-fluorouracil, and cryotherapy. The second line is calcipotriol, imiquimod, topical steroid, topical retinoid, and CO_2 laser. Other modalities including pulsed dye laser or Nd:Yag laser, and oral retinoid. The chemoprophylaxis may be needed in our patients who had multiple lesions as treatment in multiple lesions of actinic keratosis, especially in coexisting variants patient, who seem to be increased risk of malignancy transformation as our two cases.

In conclusion, the present two cases of coexisting variants of porokeratosis concurrent with squamous dysplasia. These findings suggest that the risk of malignant transformation may related to coexisting variants type presentation. Therefore, close observation and regular follow-up is mandatory in these two patients.

What is already known on this topic?

Porokeratosis is a genetic disorder of abnormal epidermal keratinization. There are many clinical variants. The coexistence variance is rare. Only one case has been reported with porokeratosis of Mibelli (PM) co-existing with disseminated superficial porokeratosis (DSP)[7], which is similar to our two patients.

Malignant transformation can be found in all types of porokeratosis, except in punctate type case. There is still no report case of coexisting variants of porokeratosis concurrent with Bowen's disease.

What this study adds?

The authors show here two cases who presented the PM co-existence with DSP, which is rare, as coexisting variants and concurrent with squamous dysplasia. These findings suggest that the risk of malignant transformation may related to coexisting variants type presentation. Hence, close observation and regular follow-up is mandatory in the patient who presented with coexisting variants type presentation.

Potential conflicts of interest

None.

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การเกิดโรค porokeratosis หลายชนิดในผู้ป่วยหนึ่งรายร่วมกับ Bowen's disease: รายงานผู้ป่วย 2 ราย

ธาริณี ก่อวิริยกมล, ปิ่นนรี ขัตติพัฒนาพงษ์, จักรพงษ์ ชุณหเสวี, เวสารัช เวสสโกวิท, ธนวัฒน์ คูธิรตระการ

การเกิด porokeratosis หลายชนิดร่วมกันในหนึ่งคนนั้นพบได้ยากโรค disseminated superficial porokeratosis (DSP) เป็น porokeratosis ชนิดหนึ่งมีลักษณะผื่นเป็นวงนูนแดงขนาดเล็กเท่า ๆ กัน จำนวนหลายผื่นกระจายทั่วตัว ซึ่งผื่นชนิด DSP มีรายงานพบร่วมกับชนิด linear porokeratosis (LP) แต่ผู้ป่วยโรค porokeratosis ที่มาด้วยชนิด DSP ร่วมกับชนิด porokeratosisof Mibelli (PM) นั้น พบน้อยมาก PM เป็น porokeratosis อีกชนิดหนึ่งที่มาด้วยลักษณะผื่นมาด้วยผื่นนูนแดงที่มีส่วนกลางของผื่นบางลงและขอบของผื่นยกตัวขึ้นคล้ายเส้นด้าย มักพบที่แขนหรือขา แม้ว่าการกลายมะเร็งพบได้ใน porokeratosis แต่เป็นที่น่าสนใจว่ายังไม่เคยมีรายงานการเกิดโรค porokertosis หลายชนิดในคนเดียวกันที่พบร่วมกับ Bowen's disease ผู้นิพนธ์ได้รายงานผู้ป่วยสองรายที่ได้รับการวินิจฉัยว่ามีภาวะ squamous dysplasia ร่วมกับการมีผื่นหลายชนิดของโรค porokeratosis ในผู้ป่วยคนเดียวกัน (ชนิด PM และ DSP)