Bilateral Segmental Neurofibromatosis with Partial Unilateral Lentiginosis

- Case Report with Review of the Literature -

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Bilateral segmental neurofibromatosis is a rare disease characterized by bilateral neurofibromas, with or without pigmented lesion, or unilateral neurofibromas with contralateral pigmented lesion, limited to a body segment. Partial unilateral lentiginosis is characterized by numerous lentigines localized to a body segment, often corresponding to one or more dermatome. Bilateral segmental neurofibromatosis combined with partial unilateral lentiginosis is very rare, and to our knowledge, only 2 cases have been reported in English literature. We herein report another case of bilateral segmental neurofibromatosis with partial unilateral lentiginosis in a 46-year-old woman. (Ann Dermatol 15(4) 156~159, 2003).

Key Words : Bilateral segmental neurofibromatosis, Partial unilateral lentiginosis

Segmental neurofibromatosis(NF) is characterized by neurofibromas and cafe-au-lait(CAL) spots, or only neurofibromas, localized to a body segment, often corresponding to one or more dermatome. Most patients with segmental NF usually have neither Lisch nodules, axillary freckles nor familial history of neurofibromas[1]. Bilateral segmental NF is defined as bilateral segmental CAL spots and/or neurofibromas without deep involvement and family history[2].

Partial unilateral lentiginosis(PUL) is characterized by numerous lentigines limited to a body segment[3]. Based on the fact that PUL has been accompanied in some patients with segmental NF, several authors have suggested that PUL could be a variant form of segmental NF[4,5] and that the case of unilateral segmental NF with contralateral PUL could be categorized to bilateral segmental NF[6].

We herein report a case of bilateral segmental NF combined with PUL and review the literature.

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CASE REPORT

A 46 year-old woman presented with asymptomatic multiple papules on the right side of the back, detected 1 year ago. Examination revealed multiple pinkish or flesh-colored soft papules and subcutaneous nodules, 0.3-0.5 cm in diameter along T5-9 dermatomal distribution on the right side of the back and on the right hand(C6, T1), and two brown soft papules on the left antecubital (T1) and inframammary area(T5). In addition, multiple grouped small brown macules, ranging from 0.1-0.8 cm in diameter, were found on the left side of the back, affecting T9-11 dermatomes in a unilateral fashion(Fig. 1). There were no axillary freckles or cafe-au-lait spots. No Lisch nodules and no spinal or bony abnormalities were found. Family history did not disclose any neurofibromas or abnormal pigmentation. Four biopsy specimens of the papules and subcutaneous nodules commonly showed a well-circumscribed, nonencapsulated dermal tumor composed of bundles of eosinophilic wavy

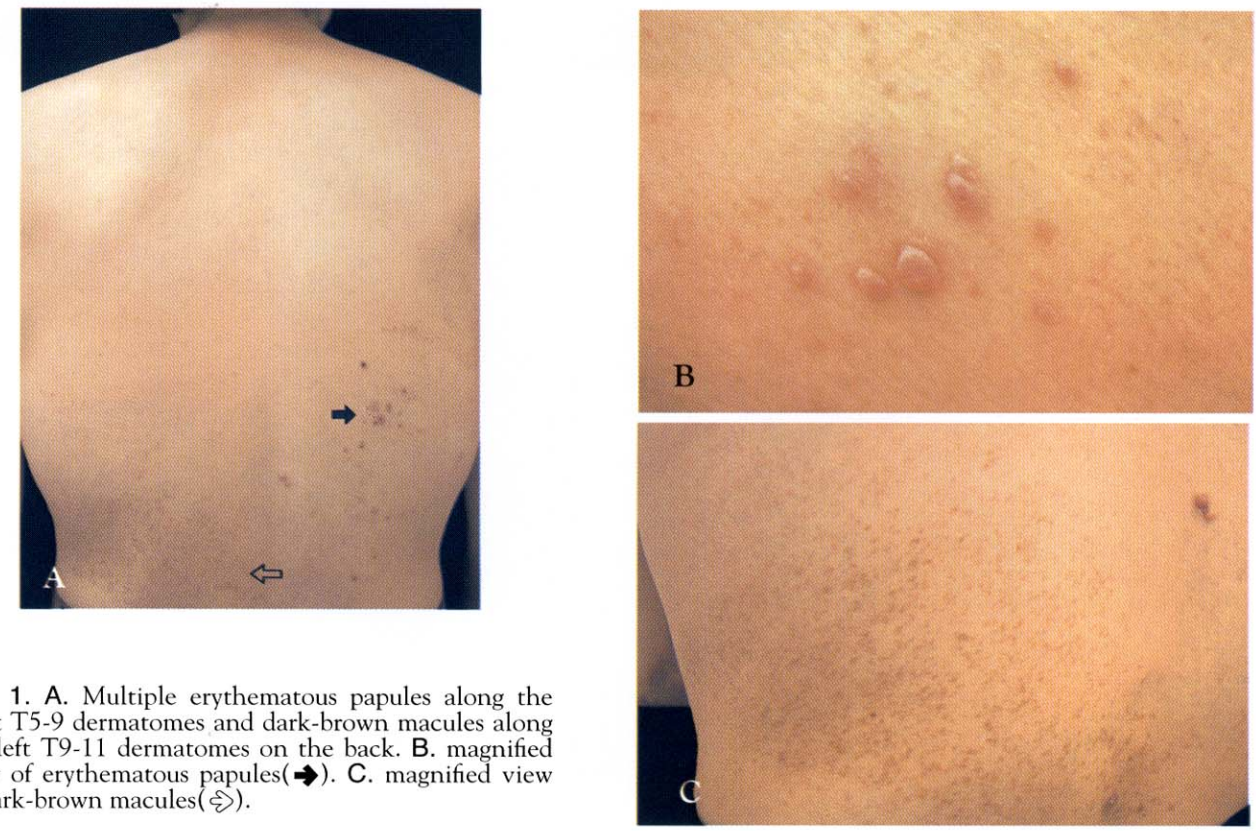

Fig. 1. A. Multiple erythematous papules along the right T5-9 dermatomes and dark-brown macules along the left T9-11 dermatomes on the back. B. magnified view of erythematous papules(➡). C. magnified view of dark-brown macules(⇦).

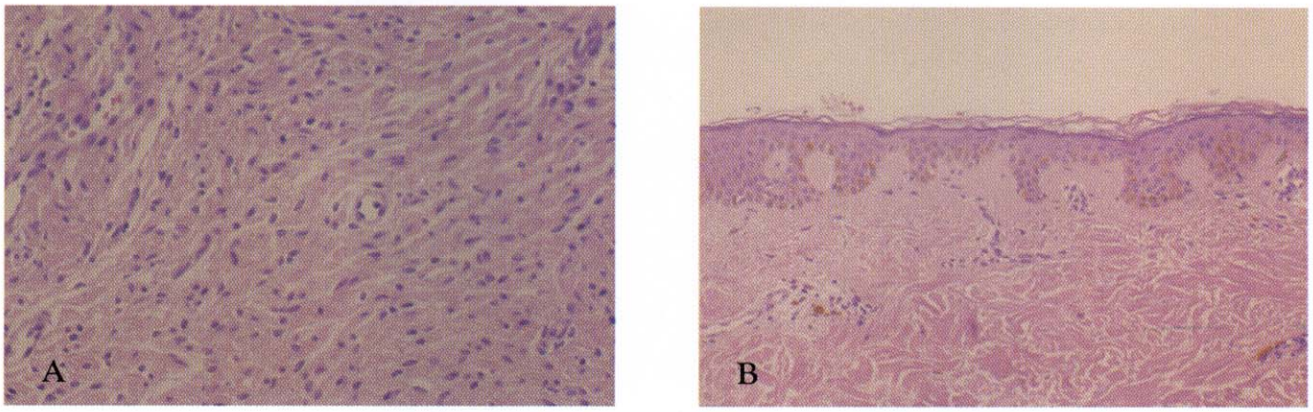

Fig. 2. A. A representative papule on the right side of the back shows thin spindle cells interspersed among thin, wavy collagenous strands. B. a macule on the left side of the back reveals moderate elongation of rete ridge, hyperpigmentation of the lower epidermis, and increased number of melanocytes(H&E A. ×400, B. ×200).

fibrous tissue and spindle cells within the bundles (Fig 2A). The cells were diffusely positive for S-100 protein. A biopsy specimen of a pigmented macule revealed the characteristic feature of lentigo simplex; moderate elongation of the rete ridges, hyperpigmentation of the lower epidermis and increased numbers of melanocytes(Fig. 2B).

On the basis of clinical manifestations and histological findings, we diagnosed this case as a bilateral segmental NF with PUL. Now we follow up the patient without special treatment.

Table 1. Review of bilateral segmental neurofibromatosis

Author	Age/Sex	Neurofibromas	Pigmented lesion	CAL spots
Roth et al.[2]	42/F	unilateral	unilateral, right back and sacrum	1, right sacrum
Dawson[8]	67/	unilateral	unilateral, left neck to groin(PUL)	3, neck and right thigh
Allegue et al.[6]	37/F	unilateral	none	2, left abdomen
Nagaoka et al.[9]	57/F	unilateral	bilateral, neck to groin(lentigines)	4, right upper arm, left abdomen and buttock, leg
Crowe et al.[10]	70/M	bilateral	none	none
Trattner et al.[11]	64/M	bilateral	none	none
Koekijk[12]	32/M	bilateral	none	none
Rose and Vakilzadeh[13]	90/F	bilateral	none	none
Cecchi et al.[14]	45/F	bilateral	none	none
Nicoletti et al.[15]	64/F	bilateral	none	none
Krishnan et al.[16]	65/F	bilateral	none	none
Winkelmann and Johnson[17]	47/M	bilateral	none	none
	70/M	bilateral	none	none
Gammel[18]	60/M	bilateral	none	1, left flank
Takiguchi and Ratz[19]	6/M	bilateral	none	2, left thigh
Paik et al.[20]	41/M	bilateral	unilateral, right back(nevus spilus)	none
Zimmermann-Schroder[21]	77/F	bilateral	unilateral, right hip	none
Wong[22]	73/F	bilateral	unilateral, left chest to groin(PUL)	1, left back
Oh et al.[23]	30/F	bilateral	none	none
This case	46/F	bilateral	unilateral left back(PUL)	none

DISCUSSION

NF is a heterogeneous disorder of variable manifestations, primarily affecting the skin, soft tissue, bone and central nervous system, characterized by multiple CAL spots and neurofibromas[7]. In 1982, Riccardi[1] classified NF into eight subtypes, categorizing the case of limitation of CAL spots and/or neurofibromas to a single unilateral segment without familial history as NF-V. In 1987, Roth et al[2]. further subdivided segmental NF into four subsets: typical cases of segmental NF that adhere to Riccardi's criteria, localized cases with deep systemic involvement, localized cases with genetic transmission, and bilateral segmental NF.

The term, bilateral segmental NF, has been used by various authors to refer to patients who had unilateral neurofibromas with contralateral pigmented lesion as well as patients who had bilateral neurofibromas with or without unilateral pigmented lesion[6]. To date, 18 cases of bilateral segmental NF have been reported in the English literature[2,6,8-22] and among them, only two cases had a concomitant PUL(Table 1). In Korean literature, one case of bilateral segmental NF has been reported[23], but in that case, there was no concomitant PUL.

Although it is known that mutations of chromosome 17 and 22 are associated with NF-1 and NF-2 respectively[7], the etiology and genetic implication of segmental NF remained poorly understood. Traditionally, a post-zygotic somatic mutation of primitive neural crest cell has been suggested as a cause for segmental NF[10] and a double somatic mutation for bilateral segmental NF[2], respectively.

PUL, first presented by Mckelway[3] in 1904, is a rare pigmentary disorder, characterized by numerous lentigines limited to a body segment, often corre-

sponding to one or more dermatomes. Several authors have suggested that PUL could be a variant form of segmental NF, on the basis that the patient with NF may have pigmented lesions such as CAL spots and axillary freckles, and that a few cases have shown the coexistence of unilateral neurofibromas and contralateral PUL[3,6]. This case is bilateral segmental NF accompanied by PUL, which might be further evidence supporting that suggestion.

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