Segmental Neurofibromatosis

Shiro Niiyama, Kanji Satoh, Satoshi Kaneko, Shinsaku Aiba and Hideki Mukai
Department of Dermatology, Yokohama Rosai Hospital, 3211 Kozukue-cho, Kohoku-ku, Yokohama, Kanagawa, 222-0036 Japan.
E-mail: sniiyama@aol.com
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Sir,

Neurofibromatosis (NF) is a heterogeneous disorder clinically characterized by the presence of neurofibromas, multiple café-au-lait spots, intertriginous freckles and Lisch nodules (pigmented iris hamartomas). We describe an unusual case of NF with cutaneous neurofibromas on the waist. The distribution was unilateral on the anterior aspect of the waist and bilateral on the posterior aspect.

CASE REPORT

A 68-year-old Japanese woman was referred to our department for evaluation of skin lesions of her waist. At the age of 30, she had noticed gradually increasing numbers of these lesions, limited to the same cutaneous areas. No other members of her family or close relatives exhibited a similar condition or abnormal pigmentation. Her past history was unremarkable except for a colon carcinoma. Clinical examination of the skin revealed numerous, soft, reddish nodules measuring 3–8 mm in diameter, showing a segmental arrangement on the posterior aspect bilaterally and on the left side with sharp demarcation at the mid-line on the anterior aspect (Fig. 1). They were pruritic and minimally tender on palpation. A biopsy specimen of the nodule showed typical features of neurofibroma. No café-au-lait spots or Lisch nodules were detected. Complete blood cell count and chemical studies were normal, and chest X-ray and nuclear magnetic resonance imaging of the head were normal.

DISCUSSION

Because of the great variability of its clinical presentation, Riccardi classified NF into eight categories based

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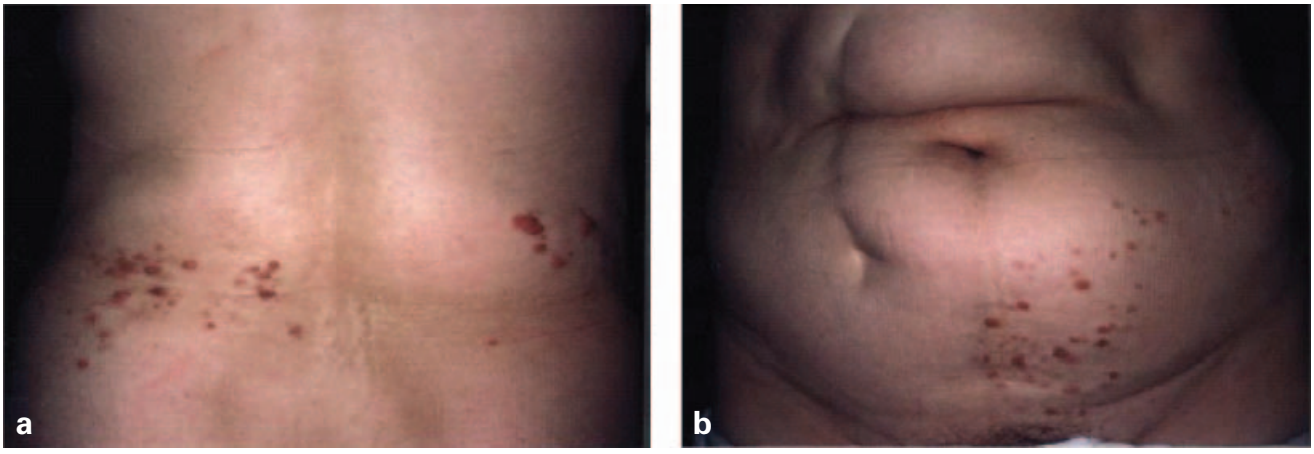

Fig. 1. Waist showing multiple neurofibromas distributed bilaterally on the trunk (a) and diffuse neurofibromas are present on the left side with sharp demarcation at the mid-line on the anterior aspect (b).

on clinical features and inheritance (1). However, the definition which required strict one-sidedness of NF1 features such as café-au-lait spots, freckling and/or neurofibromas without crossing the midline was too restrictive when viewed in the light of current knowledge of mosaicism. The strictly defined segmental NF was termed NF5 in Riccardi's clinical classification of the neurofibromatoses. Broader definitions were given by Roth et al. (2). However, their classification schemes, which include heritable and non-heritable clinically distinguishable subtypes, were not in agreement with genetic knowledge (3). A classification for neurofibromatoses into NF1, NF2, alternate and related forms of either NF1 or NF2 was proposed (4), according to the present understanding of the molecular aspects of neurofibromatoses. Mosaicism in NF1 can be divided into two groups: mosaic-localized NF1 (i.e. segmental NF1) and mosaic-generalized NF1 (i.e. patients cannot be distinguished clinically from classic patients with a constitutively inherited germ-line mutation) (5). These classifications most probably reflect the time of the mutational event during embryonic development, with individuals having features such as only a neurofibroma or a café-au-lait spot confined to a small body region, representing individuals for which the somatic mutation has occurred very late in development. The segmental distribution of NF1 signs is generally thought to reflect somatic mosaicism, recently proven by mutation analysis (6, 7). Unlike NF1, which has an incidence of 1 in 3000 births, and is one of the most common inherited diseases, segmental NF is extremely rare (1). Segmental NF is approximately 10–20 times less frequent than type NF 1 (7). Epidemiological studies reveal that females are affected twice as often as males (8). The age of onset falls into a bimodal distribution, with peaks at 10–30 years and 50–70 years (9). The right side of the body is more commonly affected than the left side (4:3), and approximately 6% of cases are bilateral (10). Bilateral segmental NF is extremely rare, only 20 cases have been reported in the English language literature. However, this is the first report of a case in which NF has been distributed unilaterally on the anterior aspect side and bilaterally on the posterior aspect.

REFERENCES

1. Riccardi VM. Von Recklinghausen neurofibromatosis. N Engl J Med 1981; 305: 1617–1627.
2. Roth MR, Martines MA, James WD. Segmental neurofibromatosis. Arch Dermatol 1987; 123: 917–920.
3. Happle R. Segmentale Neurofibromatose und Keimbahnmosaik. Hautarzt 1991; 42: 739–740.
4. Viskochil DH, Carey JC. Alternate and related forms of the neurofibromatoses. In: Huson SM, Hughes RAC, eds. The neurofibromatoses – a pathogenetic and clinical overview. London: Chapman & Hall, 1994: 445–474.
5. Ruggieri M, Huson SM. The clinical and diagnostic implications of mosaicism in the neurofibromatoses. Neurology 2001; 56: 1433–1443.
6. Tinschert S, Naumann I, Stegmann E, Buske A, Kaufmann D, Thiel G, et al. Segmental neurofibromatosis is caused by somatic mutation of the neurofibromatosis type 1 (NF1) gene. Eur J Hum Genet 2000; 8: 455–459.
7. Vandenbroucke I, Doorn RV, Callens T, Cobben JM, Starink TM, Messiaen L. Genetic and clinical mosaicism in a patient with neurofibromatosis type 1. Hum Genet 2004; 114: 284–290.
8. Sanchez Conejo-Mir J, Herrera Saval A, Camacho Martinez F. Segmental neurofibromatosis. J Am Acad Dermatol 1989; 20: 681–682.
9. Finley EM, Kolbusz RV. Segmental neurofibromatosis clinically appearing as a nevus spilus. Int J Dermatol 1993; 32: 358–360.
10. Hager CM, Cohen PR, Tschen JA. Segmental neurofibromatosis: case reports and review. J Am Acad Dermatol 1997; 37: 864–869.