3. Styperek A, Bayers S, Beer M, Beer K. Nonmedical-grade injections of permanent fillers: medical and medicolegal considerations. J Clin Aesthetic Dermatol. 2013;6:22–9.
4. Laitano FF, Gazzale A, Siqueira EJ, Martins PDE, Oliveira MP. Complications in self-injection of chemicals to increase muscle. Rev Bras Cir Plást. 2016;31:136–9.
5. Wortsman X, Wortsman J. Sonographic outcomes of cosmetic procedures. Am J Roentgenol. 2011;197:W910–8.
6. De Cabo-Francés FM, Alcolea JM, Bové-Farré I, Pedret C, Trelles MA. Ecografía de los materiales de relleno inyectables y su interés en el seguimiento diagnóstico. Cir Plástica Ibero-Latinoam. 2012;38:179–87.
7. Morales-Raya C, Calleja-Algarra A, Tous-Romero F, Rivera-Díaz R. Parafinoma de pene: ¿le hacemos una ecografía? Actas Dermo-Sifiliogr. 2017;108:478–80.

D. Morgado-Carrasco,* X. Bosch-Amate, X. Fustà-Novell, P. Giavedoni

Servicio de Dermatología, Hospital Clínic de Barcelona, Universitat de Barcelona, Barcelona, Spain

* Corresponding author.
E-mail address: morgadodaniel8@gmail.com
(D. Morgado-Carrasco).

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Bilateral Segmental Neurofibromatosis on the Lower Limbs☆

Neurofibromatosis segmentaria bilateral en extremidades inferiores

To the Editor:

Segmental neurofibromatosis (NF) is a rare entity characterized by neurofibromas, with or without the presence of café au lait spots, distributed in either 1 or, less frequently, 2 or more dermatomes.[1,2]

A 55-year-old woman with no personal or family history of interest was seen at our dermatology department for multiple skin-colored papules and nodules (3–15 mm in diameter) with an elastic consistency that had appeared 10 years earlier and were located exclusively in the distal areas of the legs and on the feet (Figs. 1 and 2). Café au lait spots, axillary freckles, and plexiform neurofibroma lesions were absent. Two of the lesions were excised and subsequent histology confirmed the clinical suspicion of neurofibroma (Fig. 3). The patient was diagnosed with bilateral segmental NF. Ocular, neurological, and visceral involvement were ruled out. The patient was monitored for 10 years, during which no new lesions appeared in other areas of the body.

Segmental NF is 10 to 20 times less frequent than classical type I NF.[2,3] It is caused by somatic mosaicism due to a postzygotic mutation in the *NF1* gene. Therefore, all cases are sporadic by definition. Some familial cases have been described, and can be explained by somatic and gonadal involvement due to mosaicism, although there are also some cases of vertical transmission of segmental NF that this mechanism cannot adequately explain. Depending on whether the mutation occurs before or after tissue differentiation, the clinical phenotype of mosaicism can be generalized or localized, respectively.[1–6]

NF was first classified in 1982, and divided into 8 subtypes, of which type 5 corresponded to segmental NF, defined by the presence of pigmentation disorders (including café au lait spots or axillary freckles) or of neurofibromas located in a single unilateral segment of the body without crossing the midline, without a family history of NF and

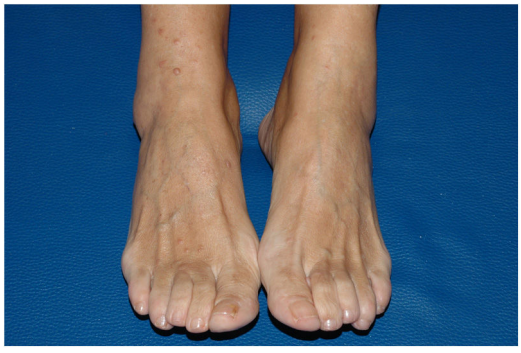

Figure 1 Skin-colored papules and nodules compatible with neurofibromas on the front of the legs and on the feet.

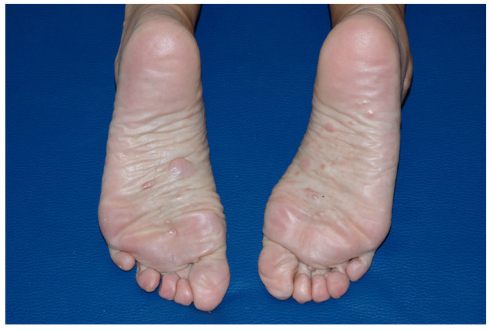

Figure 2 Skin-colored papules and nodules compatible with neurofibromas on the soles of both feet.

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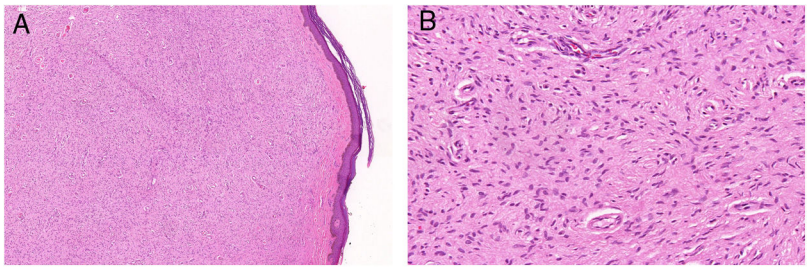

Figure 3 A, Proliferation of spindle cells in the dermis with Grenz zone (hematoxylin-eosin, original magnification ×5.85). B, Spindle cells with oval nuclei and some mast cells (hematoxylin-eosin, original magnification ×30).

without systemic involvement or extracutaneous lesions.[2,7] Because not all patients with segmental involvement corresponded to the description of type 5 NF, in 1987 Roth et al proposed a classification system for segmental NF consisting of 4 categories: true segmental NF; localized NF with deep involvement; hereditary segmental NF; and bilateral segmental NF.[1,2,7] Yet another classification system describes 4 types of segmental NF according to the corresponding lesions: pigmentation disorders only; neurofibromas only; pigmentation disorders with neurofibromas; and isolated plexiform neurofibromas.[5,6]

Bilateral segmental NF is an uncommon form of segmental NF, first described by Gammel in 1931.[7] In their series of 82 cases of segmental NF, Hager et al[8] found that the most frequent clinical presentation was isolated unilateral neurofibromas occupying dermatomes (predominantly in the cervical region, with decreasing frequency in the thoracic, lumbar, and sacral regions), and observed bilateral involvement in 5 cases.

A review of 15 published cases of bilateral segmental NF suggests that the most frequent clinical presentation is the exclusive presence of bilateral neurofibromas without pigmented lesions affecting the lumbar region, scalp, chest wall, chest, upper extremities, and infraorbital region.[7] We have not found any published cases of bilateral segmental involvement of the lower extremities.

Diagnosis of segmental NF requires a physical examination to evaluate other cutaneous manifestations of the disease and rule out generalized involvement, and an ophthalmological examination to rule out the presence of Lisch nodules.[1,3] Clinically, the disease course is similar to that of type I NF, with progressive development of pigmentation disorders and plexiform neurofibromas in childhood and neurofibromas in adulthood.[2,5,6]

Interestingly, segmental NF is twice as common in women than men, and the right side of the body is more commonly affected than the left.[2,3,9]

There are no specific guidelines for the treatment and follow-up of segmental NF and there is some controversy as to whether segmental NF is associated with an increase in comorbidities typical of type I NF.[10] However, patients should know that the absence of generalized type I NF implies a low risk of disease-related complications.[1,2,6] Given that mosaicism can also affect the germline, genetic counseling should be considered for affected individuals.[4,9]

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

1. Jeon WS, Kim HS, Cho SH, Lee JD. Bilateral segmental neurofibromatosis on the face. Ann Dermatol. 2015;.27:115–7.
2. Hardin J, Behm A, Haber RM. Mosaic generalized neurofibromatosis 1: Report of two cases. J Cutan Med Surg. 2014;.18:271–4.
3. Krishnan RS, Angel TA, Orengo IF, Hsu S. Bilateral segmental neurofibromatosis: A case report and review. Int J Dermatol. 2001;.40:409–11.
4. Gonzalez G, Russi ME, Lodeiros A. Bilateral segmental neurofibromatosis: A case report and review. Pediatr Neurol. 2007;.36:51–3.
5. Ruggieri M. Mosaic (segmental) neurofibromatosis type 1 (NF1) and type 2 (NF2): No longer neurofibromatosis type 5 (NF5). Am J Med Genet. 2001;.101:178–80.
6. Ruggieri M, Huson SM. The clinical and diagnostic implications of mosaicism in the neurofibromatoses. Neurology. 2001;.56:1433–43.
7. Wong SS. Bilateral segmental neurofibromatosis with partial unilateral lentiginosis. Br J Dermatol. 1997;.136:380–3.
8. Hager CM, Cohen PR, Tschen JA. Segmental neurofibromatosis: Case reports and review. J Am Acad Dermatol. 1997;.37:864–9.
9. Lopes MR, Vilar AN, Pockstaller MP, Daher JG, Azulay DR. Bilateral segmental neurofibromatosis. Int J Dermatol. 2014;.53:1136–7.
10. Santos Alarcón S, García-Briz MI, Mateu-Puchades A. Comorbidity associated to segmental neurofibromatosis. Med Clin (Barc). 2019;.152:33.

R. Fornons-Servent, A. Talavera-Belmonte, A. Bauer-Alonso, J. Marcoval

Servei de Dermatologia, Hospital Universitari de Bellvitge, L'Hospitalet de Llobregat, Barcelona, Spain

E-mail address: rfornons@bellvitgehospital.cat (R. Fornons-Servent).

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