

limbs, most cases involve broad Blaschko lines, making it more difficult to recognize a clear mosaic pattern. In our patient, the presence of morphea lesions along 1 limb, following the path of narrow Blaschko lines, supports the origin of linear morphea from cutaneous mosaicism. It is not known why the majority of cases of linear morphea reported are associated with broad Blaschko lines and only a few with narrow Blaschko lines. It may be that cutaneous mosaicism of ectodermal origin tends to follow the narrow lines whilst that of mesodermal origin tends to follow broad lines, although this correlation is not complete.⁵ With regard to morphea, it is likely that it is not a single disease but rather a common clinical manifestation of a number of disorders with different etiologies.

As with other patients reported in the literature, the findings in our patient support the hypothesis that linear morphea is, at least in a significant number of cases, the expression of a genetic mosaicism of a disease of probable polygenic origin. The presence of circulating antibodies⁶ and the existence of patients with multiple lesions of morphea and who also present linear lesions, supports the concept of mosaicism for linear morphea; those cases probably represent segmental manifestations superimposed on a polygenic disorder. The finding of this condition in patients with other collagen diseases, such as linear lupus erythematosus,⁷ is another argument in favor of this hypothesis.

Dermatologists' Approach to Lesions Suggestive of Onychomycosis of the Toenails

B. Aranegui, I. García-Doval, and M. Cruces

Servicio de Dermatología, Complejo Hospitalario de Pontevedra-Hospital Provincial, Pontevedra, Spain.

To the Editor:

Onychomycosis of the toenails is a common problem (accounting for more than 50% of all nail disease, with a prevalence in Europe of 26.9%,¹ and close to 50% in the population over 70 years of age). It affects quality of life and is responsible for 1.8 medical consultations per patient every 6 months.² The systemic treatment recommended at the present time is safe, and severe adverse reactions are rare.^{3,4}

Current clinical guidelines recommend performing direct examination of nail fragments with potassium hydroxide, culture, or biopsy of the nail with pathological study in order to confirm the diagnosis before starting systemic treatment.⁵ However, these tests are not as reliable as might be hoped. The 3 tests have a positive predictive value of around 75% and a negative predictive value that

Correspondence:
Antonio Torrelo
Servicio de Dermatología, Hospital del Niño Jesús
C/ Menéndez Pelayo, 65
28009 Madrid, Spain

Conflicts of Interest

The authors declare no conflicts of interest.

References

1. Soma Y, Kawakami T, Yamasaki E, Sasaki R, Mizoguchi M. Linear scleroderma along Blaschko's lines in a patient with systematized morphea. *Acta Derm Venereol.* 2003;83:362-4.
2. Mukhopadhyay AK. Linear scleroderma following Blaschko's lines. *Indian J Dermatol Venereol Leprol.* 2005;71:421-2.
3. Hauser C, Skaria A, Harms M. Morphea following Blaschko's lines. *Br J Dermatol.* 1996;134:594-5.
4. Rai R, Handa S, Gupta S, Kumar B. Bilateral en coup de sabre – a rare entity. *Pediatr Dermatol.* 2000;17:222-4.
5. Arnold WP, Steijlen PM, Happle R. Focal dermal hypoplasia (Goltz-Gorlin syndrome). *Br J Dermatol.* 1993;129:214-5.
6. El-Azhary RA, Aponte CC, Nelson M, Weaver AL, Homburger HA. Antihistone antibodies in linear scleroderma variants. *Int J Dermatol.* 2006;45:1296-9.
7. Heid E, Grosshans E, Gonda J, Pare M, Lipsker D. Eruption Blaschko linéaire avec biologie lupique. *Ann Dermatol Venereol.* 1996;123:331-3.

varies between 67% and 90%.^{6,7} Using only these tests, approximately 25% of patients will receive unnecessary treatment and between 10% and 33% of patients will remain untreated, depending on the test used. For this reason, dermatologists sometimes rely more on the clinical signs than on the results obtained in those tests.

Our aim has been to describe the dermatologist's approach to lesions suggestive of onychomycosis of the toenails. For this purpose, on May 31, 2008, we performed an anonymous survey of 68 participants at the meeting of the Galician Section of the Spanish Academy of Dermatology and Venereology (AEDV). More than 95% of dermatologists in Galicia belong to this section of the society. The survey was answered by 51 individuals (44.7% of the members of the section). Mean duration of professional experience was 10 years (interquartile range,

3–23 years) and physicians would see a mean of 26 patients at each clinic (interquartile range, 24–30).

When evaluating a foot with signs and symptoms suggestive of onychomycosis (clinical estimation of the probability of onychomycosis, 80%), 25% of the respondents always confirmed the clinical diagnosis with additional tests. A further 25% confirmed the diagnosis in half of cases, and 18% sought confirmation in less than 33% of cases. On average, in a situation such as this, dermatologists confirm the diagnosis in 73% of cases. These percentages showed no correlation with the years of professional experience (divided into tertiles and using a test of association, $P = .29$) or with the number of patients seen at each clinic (divided into tertiles and using a test of association, $P = .46$).

Empirical antifungal treatment was started by 62% (95% confidence interval, 49%–76%) on seeing a toenail highly suggestive of onychomycosis and with negative results in the tests. This percentage also did not correlate with the years of experience (divided into tertiles and using a test of association, $P = .82$) or with the number of patients seen at each clinic (divided into tertiles and using a test of association, $P = .67$).

Respondents considered the following risk factors indicative of probable onychomycosis, in descending order of frequency: presence of tinea pedis (52.9%), previous history of mycosis (35.2%), diabetes mellitus (31%), immunosuppression (29.4%), presence of lesions on the fingernails (19.6%), use of public dressing-rooms (15%), and advanced age (13.7%).

According to our results, only a quarter of dermatologists always confirmed the diagnosis of onychomycosis through additional tests. When faced with suggestive lesions and negative results of the tests, 62% started systemic treatment. This approach differs from what is recommended in the clinical guidelines and usual texts. This is probably because their experience tells them that the available diagnostic tests are not sufficiently sensitive or specific, increase the cost of diagnosis, require follow-up consultations, and can lead to unnecessary treatment. Furthermore, systemic treatments are becoming increasingly safer and less expensive. This clinical problem has led to a number of studies. Effendy et al,¹ on analyzing the preliminary results of the European Onychomycosis Observatory study, found that only 39.6% of dermatologists sent samples for analysis, with a positive result in 78.1% of cases. Mehregan and Gee⁸ looked at the possibility of empirical treatment of all patients, but this did not appear to be a cost-effective alternative. Fletcher et al^{9,10} attempted to draw up clinical diagnostic guidelines, identifying 4 clinical variables with diagnostic value.

As a limitation of our study, the sample could present a small bias as the dermatologists attending the meetings may not be representative of all dermatologists. Another possible bias could be social acceptability (a tendency

to give what is considered to be the most orthodox answer); this would mean that the percentage of cases of onychomycosis that are confirmed could be even lower. This bias is minimized through the use of anonymous surveys.

The fact that dermatologists do not confirm the diagnosis of onychomycosis in all cases suggests that there is a clinical decision-taking problem that should be investigated.

Correspondence:

Beatriz Aranegui Arteaga
Servicio de Dermatología
Complejo Hospitalario de Pontevedra-Hospital Provincial
C/ Loureiro Crespo, 2
36001 Pontevedra, Spain
Beatriz.aranegui.arteaga@sergas.es

Conflicts of interest

The authors declare no conflicts of interest.

References

1. Effendy L, Lecha M, Feuilhade de Chauvin M, Di Chiacchio N, Baran R; European Onychomycosis Observatory. Epidemiology and clinical classification of onychomycosis. *J Eur Acad Dermatol Venereol.* 2005;19 Suppl 1:8–12.
2. Drake LA, Scher RK, Smith EB, Faich GA, Smith SL, Hong JJ, et al. Effect of onychomycosis on quality of life. *J Am Acad Dermatol.* 1998;38:702–4.
3. Crawford F, Young P, Godfrey C, Bell-Syer SEM, Hart R, Brunt E, et al. Oral treatments for toenail onychomycosis: a systematic review. *Arch Dermatol.* 2002;138:811–6.
4. Chang CH, Young-Xu Y, Kurth T, Orav JE, Chan AK. The safety of oral antifungal treatments for superficial dermatophytosis and onychomycosis: a meta-analysis. *Am J Med.* 2007;120:791–8.
5. Roberts DT, Taylor WD, Boile J. Guidelines of treatment of onychomycosis. *Br J Dermatol.* 2003;148:402–10.
6. Weinberg JM, Koestenblatt EK, Tutrone WD, Tishler HR, Najarian L. Comparison of diagnostic methods in the evaluation of onychomycosis. *J Am Acad Dermatol.* 2003;49:193–7.
7. Lawry MA, Haneke E, Strobeck K, Martin S, Zimmer B, Romano PS. Methods for diagnosing onychomycosis: a comparative study and review of the literature. *Arch Dermatol.* 2000;136:1112–6.
8. Mehregan DR, Gee SL. The cost effectiveness of testing for onychomycosis versus empiric treatment of onychodystrophies with oral antifungal agents. *Cutis.* 1999;64:407–10.
9. Fletcher CL, Hay RJ, Smeeton NC. Observer agreement in recording the clinical signs of nail disease and the accuracy of a clinical diagnosis of fungal and non-fungal nail disease. *Br J Dermatol.* 2003;148:558–62.
10. Fletcher CL, Hay RJ, Smeeton NC. Onychomycosis: the development of a clinical diagnostic aid for toenail disease. Part I. Establishing discriminating historical and clinical features. *Br J Dermatol.* 2004;150:701–5.