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### New findings in black piedra infection

SIR, Black piedra is an infection of the hair produced by the ascomycete *Piedraia hortae* (Brumpt), the term proposed by Fonseca and Leão. It is a typical infection of tropical and subtropical regions.<sup>1–5</sup> However, due to worldwide travel, it may also occur sporadically in other regions, even in Europe.<sup>6,7</sup> The infection is characterized by the presence of large black nodules that appear externally on the hair.

A peculiar feature of *P. hortae*, unique among pathogenic fungi, is the production of sexual spores in the parasitic phase. Natural habitats of *P. hortae*, other than the hair of primates<sup>4</sup> including man, are not known. However, it has been suggested that its source could be stagnant water,<sup>3</sup> soil<sup>8</sup> or vegetables.<sup>2</sup> The morphology of the infecting structures has previously been reported using light and electron microscopy,<sup>1,4,9–12</sup> and it has been concluded that fungal activity is confined to the cuticle, without penetration of the hair shaft.<sup>1,9–11</sup>

We provide clear evidence of the keratinolytic activity of this fungus at the cuticular and at the cortex level. Hairs with black piedra isolated from Brazilian Indians (Xingu) were investigated studying serial sections for light and transmission electron microscopy. The fungus showed a strong keratinolytic activity being able to destroy both the cuticle and the hair cortex. The sequence of degradation of the histological components of the hair followed a similar pattern to that reported for dermatophytes and other keratinolytic fungi.<sup>13–15</sup>

In mature nodules the cuticular scales almost completely disappeared while the cortex remained unaltered except in those regions where its normal components were degraded by the fungus or where active boring hyphae penetrated it in several directions (Fig. 1). The activity of the penetrating hyphae does not leave empty spaces. The lytic regions are filled up with electron dense extracellular fibrous material. Something similar occurs with other keratinolytic fungi such as *Chrysosporium tropicum*<sup>14</sup> and *Microsporum canis*.<sup>15</sup> Details of the keratinolytic process will be extensively described elsewhere.

It is also worth mentioning that in *P. hortae* infection the natural self-degeneration of the fungal cells involved in the hair breakdown arising in keratinolytic fungi at the later stages of hair destruction,<sup>13</sup> does not occur. In *P. hortae*, the cementing extracellular material that holds together and compacts the pseudoparenchymatous cells of the nodule is probably the main factor responsible for preserving the fungus against desiccation and environmental attack. Furthermore, this compact organization can also impair successful treatment explaining why the untreated disease may have a very chronic course. The classical and most effective therapy has been the cutting or shaving of the hairs.<sup>8</sup> Recently the use of newer antifungal drugs, such as terbinafine, has shown promising results.<sup>6,7</sup>

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Unitat de Microbiologia,  
Facultat de Medicina i Ciències de la Salut,  
Universitat Rovira i Virgili, 43201, Reus, Spain

M.J.FIGUERAS  
J.GUARRO  
L.ZAROR\*

\*Instituto de Microbiología Clínica,  
Facultad de Medicina,  
Universidad Austral de Chile,  
Casilla 567, Valdivia, Chile

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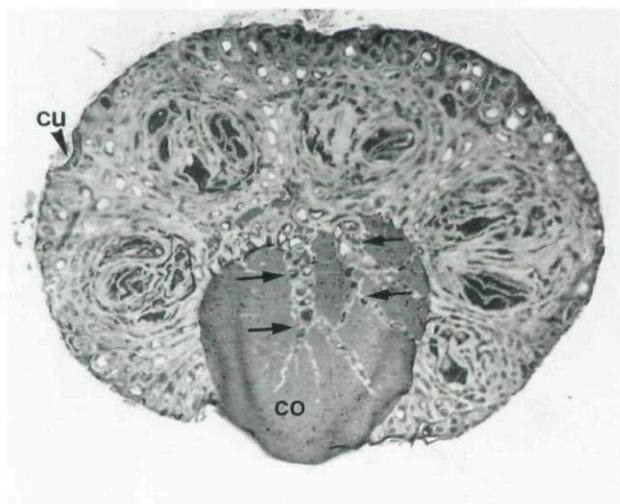


Figure 1. Mature nodule of black piedra. The cuticular scales (cu) have almost completely disappeared. Active boring hyphae (arrows) penetrate the cortex (co) in several directions digesting the cortex keratin ( $\times 410$ ).

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### Prurigo pigmentosa treated with minocycline

SIR, Prurigo pigmentosa (PP), is a peculiar, reddish, pruritic papular eruption which leaves a marble-like or reticular pigmentation. It was first described in the Japanese.<sup>1,2</sup> PP is symmetrical and its onset is often sudden.<sup>3</sup> The back, neck, chest, lumbosacral region and antecubital fossae are characteristically involved,<sup>1-4</sup> sometimes with the limbs and abdomen.<sup>5</sup> To date, only nine non-Japanese patients have been described.<sup>3-10</sup> We report two Italian patients with PP: both were mentally retarded.

The first patient, a 17-year-old mentally retarded autistic boy, in poor health but with no history of atopy, presented with a severely pruritic erythematous eruption of sudden onset. There were confluent, symmetrical and hyperpigmented papules, showing a reticulate pattern, mainly on the lumbosacral area and the legs, with a few isolated papules on the forearms (Fig. 1), and abdomen. The lesions were 1-2 mm in diameter. The buttocks and axillae were darkly pigmented, and some pustules were present on the upper back.

The second patient, a 34-year-old female with Crouzon syndrome and behavioural disturbances, developed a pruritic rash, of sudden onset, with erythematous, isolated, symmetrical and hyperpigmented papules on the buttocks and the sacral area. The lesions were 2-3 mm in diameter and a hyperpigmented reticulated pattern was observed between the papules. She had been taking carbamazepine, clomipramine and bromazepam.

Both patients had a normal full blood count. On histology, early papules showed non-specific dermal infiltration by mononuclear cells. Pigmented lesions showed an increase in epidermal melanin, with an increased number of melanocytes. Direct immunofluorescence was negative. Electron microscopy showed acantholysis of the basal and suprabasal keratinocytes with intercellular oedema (Fig. 2). Lymphocytes were observed among the epithelial cells, melanocytes were numerically increased, and melanosomes were abundant. A large number of melanosomes were observed in the keratinocytes. Langerhans cells were activated.

In the first patient, minocycline, 50 mg/day, for 2 months,

induced resolution of the papular eruption, the folliculitis, the pruritus, and the pigmentation. In the second patient, minocycline, 100 mg/day, for 2 weeks, resolved the papular eruption and pruritus, and reduced the pigmentation. However, the PP relapsed slightly a month after minocycline was stopped.

The pathogenesis of PP is unknown. An environmental factor is suggested.<sup>2</sup> In a few cases, PP has been related to friction from clothing,<sup>2</sup> or contact with an allergen.<sup>7,11</sup> In one case, PP was associated with the ingestion of a bismuth compound.<sup>9</sup> We excluded atopic dermatitis, lichen pigmentosus, prurigo melanotica, pigmented contact dermatitis, ashy dermatosis, reticulate papillomatosis, and dermatitis herpetiformis. PP has never been described in mentally retarded or in autistic persons, but it is unlikely that the mental state is relevant.

It may be relevant that our first patient was in poor health and had a low body weight, as did one previous patient,<sup>12</sup> and, he had folliculitis of the back, as did another patient.<sup>4</sup> Our second patient took carbamazepine, clomipramine and bromazepam, but we do not know if these drugs are relevant. Minocycline is to be preferred to sulphamethoxazole,<sup>13,14</sup> due to the potential side effects of sulphonamides.<sup>15</sup>



Figure 1. Isolated papules and reticulate pigmentation are seen over the antecubital fossa (first patient).

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