

## QUIZ SECTION

### Pain and Hyperpigmentation of the Toes: A Quiz

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A 20-year-old female student, living in Rio de Janeiro, Brazil, developed well-delimited, asymptomatic, dark-reddish macules, on the distal phalanges of the 3 first toes of her left foot (Fig. 1). The lesions appeared minutes after having put her shoes on, with an immediate sensation of burning. The shoes had been left outdoors overnight and she had observed an animal inside.

The patient appeared to be in a good general state of health, with no palpable lymph nodes or vascular involvement. There were no signs and symptoms of systemic disease. Diagnosis was based on epidemiological factors, clinical examination and observation of the agent.

*What is your diagnosis?* See next page for answer.



Fig. 1. Clinical presentation of the skin lesions: well-delimited, asymptomatic, dark-reddish macules, on the distal phalanges of the 3 first toes of the left foot.  
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## ANSWERS TO QUIZ

**Pain and Hyperpigmentation of the Toes: Comment**

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**Diagnosis: Hyperpigmentation of the toes caused by millipedes**

Millipedes are arthropods, of the Diplopoda Class (1.3). They are long in form, segmented, with 2 pairs of feet on each segment, except for the first 4 segments and the head. Millipedes are found in dark, humid places and consume decaying vegetal material (1). In Brazil, the most important species is the *Rhinocricus padbergi* (1). Due to their phenotypic characteristics, they are often mistaken for earwigs or centipedes.

Liquids and vapours expelled by the arthropod as a defence mechanism can cause burning of the skin and skin hyperpigmentation in humans. Discharge of these fluids, promotes an unpleasant smell reminiscent of urine. The fluids are irritating and contain benzoquinone compounds, which are responsible for the hyperpigmentation (1–6). However, reported cases of people injured by millipedes are rare. Arab et al. (7) found the 2 most volatile constituents: 2-methyl-1,4-benzoquinone and 3.3 to 4.5-tetrahydro-1H-pyrrolo-[2.3-b]pyridine-2.6-dione in the arthropod's glands, to be responsible for the hyperpigmentation. Prolonged contact could create vesicles, blisters and ulceration (5). Ocular accidents cause conjunctival erythema, tearing, burning and, rarely, corneal ulceration (6).

Diagnosis is reached through epidemiological history and clinical examination. As there is no specific laboratory examination, finding the arthropod is essential for diagnosis.

Knowledge of this entity among clinicians is fundamental in differential diagnosis, as there are clinical similarities with systemic diseases, such as meningococcaemia, bacterial endocarditis, cryoglobulinaemia and collagenosis.

Arterial ischaemia (2), traumas and child abuse must also be eliminated as differential diagnostic.

In spite of this worrisome clinical presentation, intense washing of the affected area of skin with soap and water or alcohol is the only recommendation (1–3). Hyperpigmentation disappears in weeks or months, requiring no topical depigmentation treatment. Topical corticosteroids could be used in symptomatic cases that display burning and vesiculation (1).

## REFERENCES

1. Júnior VH, Cardoso JLC, Rotta O, Eterovic A. Accidents provoked by millipedes with dermatological manifestations: report of two cases. *An Bras Dermatol* 2000; 75: 471–474.
2. Lima CA, Cardoso JL, Magela A, Oliveira FG, Talhari S, Haddad V, Jr. Exogenous pigmentation in toes feigning ischemia of the extremities: a diagnostic challenge brought by arthropods of the Diplopoda Class (“millipedes”). *An Bras Dermatol* 2010; 85: 391–392.
3. Haddad V Jr, Cardoso JL, Lupi O, Tyring SK. Tropical dermatology: Venomous arthropods and human skin: Part II. Diplopoda, Chilopoda, and Arachnida. *J Am Acad Dermatol* 2012; 67: 347.e1–9.
4. Haddad V, Jr, Cardoso JLC. Dermatose provocada por animais venenosos. *An Bras Dermatol* 1999; 74: 441–447.
5. Radford AJ. Millipede burns in man. *Trop Geogr Med* 1975; 27: 279–287.
6. De Capitani EM, Vieira RJ, Bucarechi F, Fernandes LC, Toledo AS, Camargo AC. Human accidents involving *Rhinocricus* spp., a common millipede genus observed in urban areas of Brazil. *Clin Toxicol (Phila)* 2011; 49: 187–190.
7. Arab A, Zacarin GG, Fontanetti CS, Camargo-Mathias MI, Dos Santos MG, Cabrera AC. Composition of the defensive secretion of the neotropical millipede *Rhinocricus padbergi* Verhoeff 1938 (Diplopoda: Spirobolida: Rhinocricidae). *Entomotropica* 2003; 18: 79–82.