

## Piezogenic pedal tumors of obesity: Unusual presentation of an innocuous dermatosis

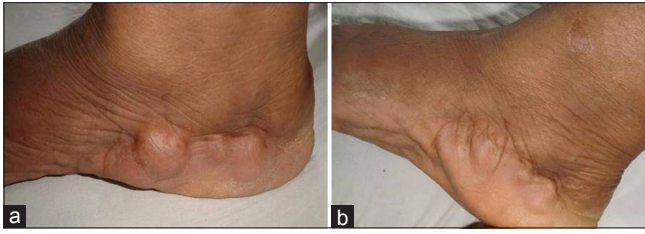
Sir,

Piezogenic pedal papules (PPP) are tiny, skin-colored, round, prominences that arise due to herniation of subcutaneous fat into the dermis under compressive stress. We herein report the unusual presentation of PPP as large nodules in an obese patient.

A 55-year-old woman presented with multiple nodules on the medial and lateral borders of both feet for 4 years. The lesions were gradually increasing in number and size and were painful on standing and walking. There was neither a history of preceding local trauma or excessive physical activity nor family history of similar lesions. She was a known case of rheumatoid arthritis for 25 years. She was obese (body mass index, 30.1 kg/m<sup>2</sup>). Examination while standing revealed multiple discrete, skin-colored nodules 1–3.5 cm in size, involving predominantly the sides of heels, extending up to midway along the medial and lateral borders of both feet [Figure 1a]. They were soft in consistency with a positive buttonhole sign. The lesions became less prominent and less painful on raising feet above the ground [Figure 1b]. Other cutaneous and systemic examinations were within normal limits. Based on the above clinical findings, a

diagnosis of piezogenic pedal papules was made. Fine-needle aspiration cytology was normal. She did not agree to skin biopsy and radiological imaging of the nodules. Because she was subsequently diagnosed with bronchoalveolar carcinoma and the pain associated with PPP was tolerable, she declined any treatment for the latter. She did not experience any change in the lesions over next 4 years.

The prevalence of PPP ranges from 2.4% to 100% in healthy adults.<sup>[1]</sup> The etiologic factors for PPP include heredity, strenuous physical activity as in weightlifters, marathon runners, and Ehlers–Danlos syndrome.<sup>[1]</sup> It has also been reported in association with Prader–Willi syndrome,<sup>[2]</sup> rheumatic heart disease,<sup>[3]</sup> and rheumatoid arthritis.<sup>[4]</sup> Although PPP has been reported in a single patient with rheumatoid arthritis, it is unclear if it was a causal or a spurious association.<sup>[4]</sup> Lesional pain occurs due to ischemia resulting from entrapment of fat and its accompanying neurovascular bundles, is found in less than 10% cases, more commonly reported in females and typically occurs on weight bearing in larger lesions following repeated trauma. The diagnosis of PPP is clinical and the existing literature suggests that histopathology probably does not have a role either in the diagnosis or in the management.



**Figure 1:** (a) Nodules on the medial side of the heel, extending to the medial border of right foot in weight-bearing position. (b) Lesions are less prominent on relieving the pressure off the heel

In view of the pressure-induced lesional changes, pain on weight bearing, and clinical morphology, we favored a diagnosis of PPP but our patient had several unusual features. Most importantly, majority of the lesions were relatively large in size (2.5–3.5 cm) in contrast to the existing literature (0.2–2 cm, average 0.8 cm)<sup>[1,3-5]</sup> and could therefore be labeled as nodules/tumors rather than papules. Obesity resulting in increased pressure on the heels may possibly explain the development of large PPP in our patient. Although increase in diameter of PPP with increasing age and body weight has been reported in children,<sup>[5]</sup> obesity as a factor in the development of PPP has not been suggested in adults. Furthermore, the lesions were only partially reducible on release of pressure in our case (and completely reducible only on manual reduction). In contrast, typical PPP lesions characteristically disappear on taking the foot off the ground. Hence, we propose the name piezogenic pedal tumors of obesity.

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### Conflicts of interest

There are no conflicts of interest.

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