Painful piezogenic pedal papules - successful low level laser therapy

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SUMMARY

Painful piezogenic pedal papules may be very difficult to treat. We describe two patients with this condition successfully treated with a low-level laser. A two-week treatment protocol induced a relatively long-lasting pain relief without any side effects.

KEY WORDS

piezogenic pedal papules, low level laser, treatment

Introduction

Piezogenic pedal papules, first described by Shelley and Rawnsley (1), represent painless or painful papules, which appear on the side of the heel, usually on its medial aspect, when the patient is standing, and disappear on sitting or lying. The condition, if painful, may be very distressing and recalcitrant to treatment. Herein we have presented two patients with painful piezogenic pedal papules successfully treated with low level laser irradiation, which may be added to a rather long list of therapeutic modalities for this condition.

Case reports

Two patients, a 64-year-old man and a 63-year-old woman, presented with skin-colored, firm, painful papules and nodules distributed over lateral and medial aspects of their heels, which cropped up on standing or walking and disappeared on sitting or lying. Both patients had noted the papules several months earlier but they had been completely painless and asymptomatic until a few weeks before the referral to our department. The number of lesions and their tenderness increased gradually.

Physical examination revealed a number of firm, skin-colored papules, 4-8 mm in diameter, while the patients were in an upright position and disappeared on sitting (Figure 1). In a recumbent position, at sites of larger papules, hollow depressions could be palpated. The female patient was biopsied. Histologic examination showed moderate acanthosis, marked hyperkeratosis and orthokeratosis. There were numerous perivascular spaces filled with fat tissue, mostly degenerated and acellular, without secondary deposition of connec-

tive tissue fibers. The dermis was composed of mature collagen fibers with a decreased number of elastic fibers and without acidic and basic mucopolysaccharides.

Standard measures usually used to alleviate the condition, like foam rubber footpads or foam-fitting plastic heel cups in conjunction with avoidance of prolonged standing or walking were not sufficient to help the patients. Literature data suggest other treatment options like surgical removal of individual papules or compression therapy using foot-and-ankle stockings. However, as patients refused to undergo surgery and were not able to provide adequate stockings, low lever laser therapy was tried as a means to eliminate the pain. They were treated with a pulsed diode soft laser (Ga-As, MID-LASER, Irradia, Sweden) with a wavelength of 904 nm, the average power output of 60 mW, and frequencies of 50 Hz (for pain) and 700 Hz (for swelling) at a dose of 1 J/cm^2 per treatment. There were 10 treatment sessions, the first five treatments once daily, and the next five applied every second day. The treatment produced a marked improvement in symptoms enabling the patients to resume their everyday activities. The first patient has been followed up for more than a year and only over the last few weeks the pain has begun to reappear on standing. He has asked for further laser treatments. The second patient has been followed up for 6 months and she is still without significant complaints.

Figure 1. Multiple firm, skin-colored papules distributed over the medial side of both feet while the patient is standing.

Discussion

Piezogenic pedal papules are skin-colored and hard papules measuring 3-8 mm in diameter, and may be painless or painful. The pain may be persistent and more intense on standing (2). If painless, they may go unnoticed and the persons may overlook their presence for a long time.

Piezogenic pedal papules are usually seen in subjects older than 40 years, mostly in women (3). Shelley and Rawnsley (1) have assumed that piezogenic pedal papules represent pressure-induced herniations of the subcutaneous fat through acquired or inherited defects in the connective tissue of the heel. The pain is then caused by resulting ischaemia. However, the cause is not known although the lesions are thought to be induced by physical activity (4), repeated pressure in predisposed individuals (2), hereditary factors (5) or collagen defects in patients with Ehlers-Danlos syndrome (6). The condition is relatively infrequently seen in dermatologic practice although some authors claim that it can be found in almost every person, if properly examined (3). However, in the vast majority of persons they are not painful and hence go unnoticed.

Histologically, especially in older lesions, there is thickening of the dermis, with a loss of the usual small fat compartments in the lower dermis and subcutis (7). Among the homogenized collagen there may be areas of necrosis with hemorrhage at the border of dermis and subcutaneous tissue (2). In the subcutaneous tissue, thin fibrous septa are degenerated, scarce or completely absent. There may also be protrusion of these enlarged fat lobules into the dermis (8,9).

Treatment options for piezogenic pedal papules comprise electro-acupuncture, compressive therapy, and surgical removal of individual large papules (3, 10). To the best of our knowledge, there have not been reports on the use of a low-level laser to treat piezogenic pedal papules. In our two patients, the low level laser treatment led to a significant improvement in their condition. At present, the mode of action of the lasers is not known. However, the irradiation enhances the regenerative capacities of tissues, suppresses inflammation and pain sensation (11). The analgesic effect of the low-level laser might be related to changes in nerve excitability (12). In addition, it aids in resorption of edema fluid and favors lymphatic and blood vascular regeneration (13, 14).

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