

PIEZOGENIC PAPULES OF THE FEET

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Abstract. Report of 6 cases of piezogenic papules of the feet. A piezogenic papule is a skin-colored papule that appears when standing and which disappears when weight is taken off the foot. They were predominantly localized on the posterior part of the medial side of the heel. In contrast to most cases reported in the literature the papules in our patients were not painful. The papules may be caused by herniation of fat, but this could not be proved histologically. In our opinion these papules are not rare; most people, however, are not aware of them.

In 1968 Shelley & Rawnsley (3) described a patient, 20 years old, suffering from painful papules appearing on the medial side of the foot above the heel when weight was placed on the foot. They supposed that the papules were caused by herniation of fat through connective-tissue defects. The extrusion of fat with its vasculature and associated nerves could be presumed to lead to anoxic pain and hence explain the complaint of painful feet when standing. The induction of the papules by pressure was so characteristic that they chose the term "piezogenic" to describe them (piesis = pressure and genic = giving rise to).

In 1970 Cohen et al. (1) reported four more cases (women 49, 37, 20 and 13 year old). In one case, the 13-year-old girl, there was no complaint of painful feet and the papules were discovered by accident when treating plantar warts. Cohen et al. (1) therefore think it likely that painful piezogenic papules are not as rare as the paucity of information about them would imply.

Galinski (2) described one patient, a 27-year-old woman, suffering from neuritis of the left foot, who for 2 years had 3 asymptomatic papules on the medial part of the right heel when standing. Biopsies of these papules have not yet been performed.

We agree with the opinion of Cohen et al. (1)

that piezogenic papules are probably not rare, as we have seen several patients with these papules of the feet. In most instances there were no complaints of painful feet on standing.

We were able to perform biopsies in a few of our patients.

REPORT OF SIX CASES

Case 1. A 45-year-old man, an engineer, suffering from psoriasis vulgaris since the age of 10, observed several papules on the medial sides of the feet above the heels when he stood. They were not painful. He only complained about restless legs and sometimes during the night about a painful sensation in the region of the Achilles tendons. There were no vascular disturbances. On examination we observed on the posterior part of the medial side of the left heel 4 light-yellow papules, measuring approx. 5 mm. One papule was larger. On palpation they felt soft, elastic. At the base of the papules one could feel a hard ring and a softer centre (button-hole phenomenon).

Along the medial aspect of the right lower heel there were 7 similar papules, only smaller in size than on the left heel. The papules on the posterior part of the medial sides of both heels did not quite disappear when the patient was lying down, but on standing they became much more prominent, more firm on palpation and more yellow in colour. Also on the lateral sides of both feet we observed a dozen small papules which were only present when the patient was standing. Two biopsies were performed from two papules while the patient was standing.

Case 2. A 54-year-old housewife, the wife of our first patient, observed 3-4 years ago on the medial sides of both lower heels some papules when she stood. They were not painful. She has no symptoms of insufficient venous circulation. There are no varices.

When she stood we observed 3 firm yellowish papules on the posterior part of the medial side of the left heel (Fig. 1) and 4 similar papules on the posterior part of the medial side of the right heel (Fig. 2). They were approx. 5 mm in diameter but two were somewhat larger. The button-hole phenomenon was present. The papules did not quite disappear when the patient was lying down,

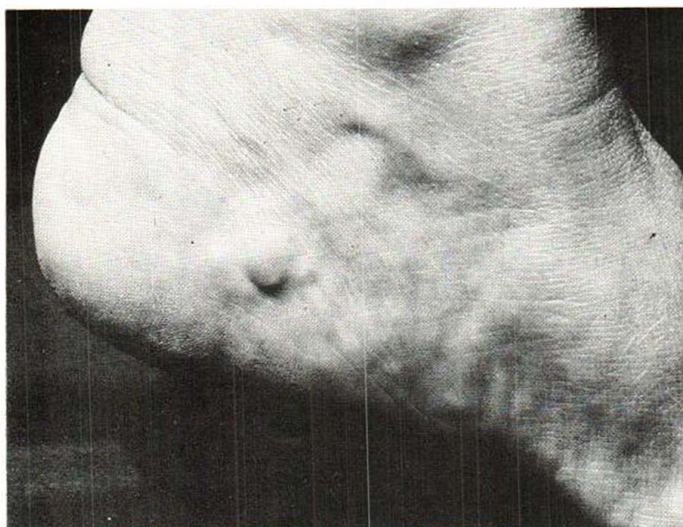


Fig. 1. Case 2. Three piezogenic papules on the posterior part of the medial side of the left heel.

but on standing they were much more prominent. No biopsy was performed.

Case 3. A 48-year-old housewife, being treated in the dermatological department for an *ulcus cruris varicosum* of the left leg. We observed on the medial aspect of the right lower heel 3 soft papules, measuring approx. 5 mm, while the patient was lying in bed. On standing, the papules were more prominent, firm and yellowish. They were situated on the posterior part of the medial side of the right heel. The button-hole phenomenon was evident. The papules were discovered by accident, as they were not painful. The venous circulation in the right leg was normal in contrast to the circulation in the left leg. A biopsy was performed.

Case 4. A 49-year-old housewife, suffering from *thrombophlebitis superficialis* of the right lower leg. We observed on the medial aspects of the right and left lower heel one soft, elastic papule. Each was situated below the *malleoli mediales*. They were only present

when the patient was standing. They were not painful and were discovered by accident.

Case 5. A 44-year-old pressman. Three firm, elastic papules approx. 4 mm in diameter were seen on the posterior part of the medial side of the right lower heel when he stood. The papules disappeared when he was sitting or lying down. They were not painful and were discovered by accident. No biopsy was performed.

Case 6. A 50-year-old dermatologist observed 2 firm, elastic yellowish papules, 4–5 mm in diameter, on the medial aspect of the left lower heel. When he sat, they almost disappeared; when he was standing they were much more prominent. They were not painful and were only discovered because we looked for them. No biopsy was performed.

Histology

In all three biopsies there was hyperkeratosis and underneath, a normal epidermis with slight acanthosis. The

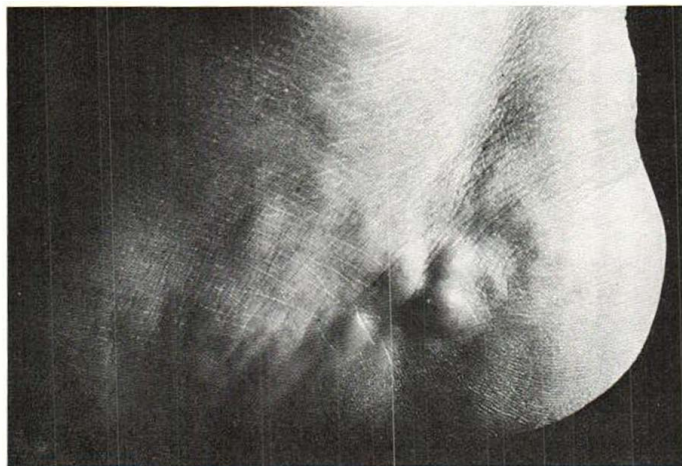


Fig. 2. Case 2. Four piezogenic papules on the posterior part of the medial side of the right heel.

Table I. Piezogenic papules of the feet; cases reported in literature and own cases

Authors	Age	Sex	Profession	Localisation	Symptoms	Number of lesions
1. Shelley and Rawnsley (1968)	20	♂	Student	Medial aspects of both lower heels	Pain, following work as a rail-road-trackman	Several
2. Cohen, Gibbs and Frank (1970)	a 49	♀	Housewife	Id. of both lower heels	Pain during prolonged standing	Several
3. Id.	b 37	♀	Housewife	Id. of both lower heels	Pain	Several
4. Id.	c 20	♀	?	Id. of both lower heels	Sudden onset of pain on standing	Several
5. Id.	d 13	♀	Schoolgirl	Id. of both lower heels	No complaints	Several
6. Galinski (1970)	27	♀	?	Id. of the right heel	No complaints	3
7. Our own cases	1; 45	♂	Engineer	Posterior part of the medial sides of both lower heels and on the lateral sides of both feet	No complaints	4 on the left heel 7 on the right heel ± 12 on the lateral sides of both feet
8. Id.	2; 54	♀	Housewife	Posterior part of the medial sides of both lower heels	No complaints	4 on the right heel 3 on the left heel
9. Id.	3; 48	♀	Housewife	Id. of the right lower heel	No complaints	3
10. Id.	4; 49	♀	Housewife	Medial aspects of both lower heels	No complaints	2; 1 on each heel
11. Id.	5; 44	♂	Pressman	Posterior part of the medial side of the right lower heel	No complaints	3
12. Id.	6; 50	♂	Medical doctor	Posterior part of the medial side of the left lower heel	No complaints	2

dermis and the subcutaneous tissue appear to be normal. Only in the first biopsy from case 1 do the small blood vessels in the mid-dermis show slight hyaline thickening of their walls. In this biopsy the subcutaneous fat seems to be localized nearer to the epidermis in one spot around a sweat duct. The collagen-, elastic- and reticulin fibres are normal. There is some edema in the dermis.

COMMENT

In all our patients the piezogenic papules were not painful. It is therefore our opinion that these papules are not rare, as most people are not aware of them. In some instances the papules may be painful on standing or walking as in the case of Shelley & Rawnsley (3) and three cases of Cohen et al. (1).

The usual localisation is on the posterior part of the medial side of the heel. When pressure is applied, the papules are firm-elastic on palpation and are usually yellowish. When the patient is sitting or lying down most papules disappear but the large papules (approx. 5 mm in diameter and larger) may still be visible when no pressure is applied.

In 5 of our 6 patients only a small number of papules was observed, always on the posterior part of the medial side of the heel. In the patients 2 and 4 the lesions were present on both feet; the patients 3, 5 and 6 only had papules on one foot.

In patient 1 a large number of papules were discovered on standing; the papules were not only localized on the posterior part of the medial sides of both feet, but also on the lateral sides. Notwithstanding this extensive involvement the patient had no complaints. His past and present history gave no clues concerning any external or internal cause of the lesions.

When reviewing the cases reported in literature and our cases (Table I), it may be noted that many patients were of middle age. This could suggest that the piezogenic papules mostly appear after many years of internal pressure. The patient of Shelley & Rawnsley (3) was a young man, 20 years old; the papules probably became manifest after a short period of hard work as a railroad trackman.

Since in all patients the papules are predomi-

nantly localized on the posterior part of the medial sides of the heels, it may be assumed that either in this region the internal pressure is high, or the resistance of the skin may be impaired because of the local anatomical structure, or both mechanisms are present. However, in the anatomical literature we could find no data on the structure of the heels which might explain the development of the piezogenic papules.

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Received March 1, 1972

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