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Cutaneous Crystal Cholesterol Emboli

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Abstract. One case of cutaneous cholesterol emboli is described. In patients affected with severe arteriosclerosis of the abdominal aorta, cholesterol crystals may become detached from an atheromatous plaque and result in micro emboli with ensuing skin lesions (livedo reticularis, nodules, purple toes, ulcerations, distal gangrene) on the lower extremities. Histopathologic study is required for diagnosis: the lumens of the arterioles were extensively occluded by macrophagic granuloma which surrounded cholesterol crystals.

Key words: Cholesterol emboli; Livedo reticularis; Nodules; Periarteritis nodosa; Distal gangrene

Cholesterol crystals may become detached from ulcerating atheromatous plaques, and then migrate and settle into the arterioles of various organs. They clog the smaller arteries and are responsible for various clinical pictures such as transient attacks of cerebral ischaemia, amaurosis fugax, hypertension, renal failure, acute or chronic pancreatitis and other abdominal symptoms. When atherosclerosis develops mainly on the abdominal aorta, embolism will be found in the lower extremities; the clogging of the cutaneous arterioles leads to various lesions: livedo reticularis, nodules, ulcerations, distal gangrene and purple toes.

CASE REPORT

A 50-year-old female patient was in excellent health until 6 months before her first admission when she noted a painful violaceous discoloration of her right fifth toe.

In January 1978, examination on admission revealed pregangrenous lesions of the whole of her right big toe with existing dorsalis pedis and femoral pulsation. Her right posterior tibial pulsation was absent. Her other toes and the rest of her foot seemed to have normal colour and temperature. There was no claudication. Arteriography confirmed the atherosclerosis. Right lumbar sympathectomy and the amputation of her toe were performed. An anticoagulant therapy was undertaken.

In April 1978, she came back for examination of the following cutaneous lesions: on her right leg painful erythematous nodules could be seen. There was no fever. On the plantar surface of her right foot there was a livedo reticularis with small ecchymoses (Fig. 1). These cutaneous lesions could not be accounted for by a fresh outbreak of arteritis, since all distal pulses were present except for the tibial posterior one. In the following weeks, a livedo reticularis developed on her right leg (Fig. 2), along with other nodules, these always announced by pain radiating in the lower extremities. Between those outbreaks, the lesions disappeared completely. The cutaneous lesions were not limited to her right-hand side, as a purpuric spot with a whitish centre was observed on her left leg after another painful spell.

A diagnosis of cholesterol crystal embolism was made possible by a cutaneous biopsy performed on one of the nodules. Two arterioles could be seen: the smaller one,

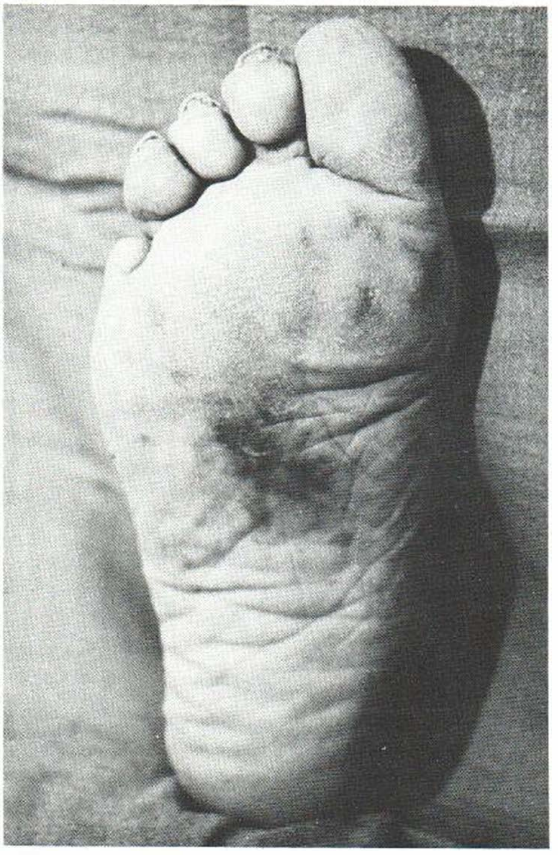

Fig. 1. Right foot, demonstrating livedo reticularis and purpuric areas of plantar surface.

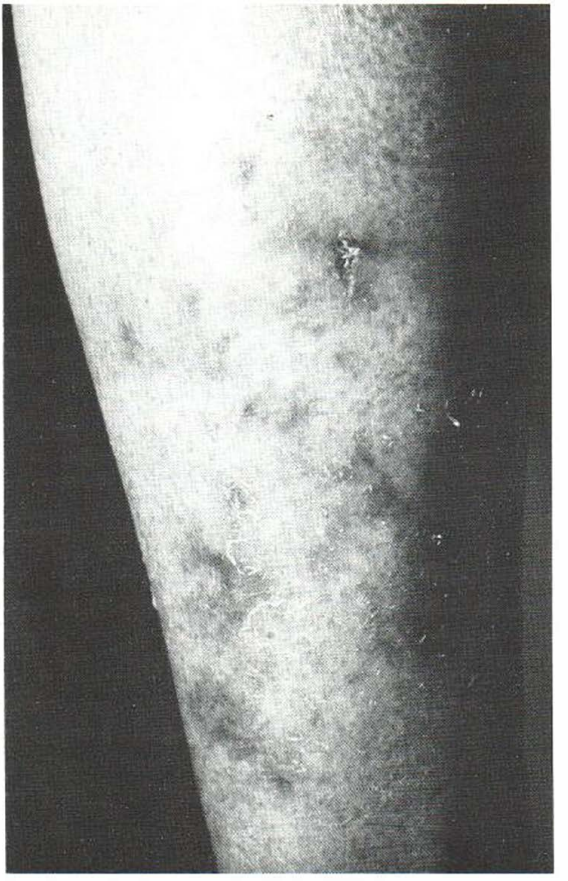

Fig. 2. Livedo reticularis of the right leg.

situated in the dermis, showed a developing thrombosis; the larger one in the subcutaneous fat revealed stenosis by fibroblastic tissue (Fig. 3*a*). A higher magnification (Fig. 3*b*) revealed that its arteriolar lumen was partially occluded by three biconvex spear-shaped forms corresponding to cholesterol crystals dissolved by the histological preparation. A foreign body giant cell reaction was observed around the crystals. A fundoscopic examination showed no cholesterol emboli in the retinal vessels. We noted a renal failure (serum creatinine 18 mg/l) with hypertension probably due to multiple atheromatous emboli in the kidneys. Thus, a mere cutaneous biopsy enabled us to avoid a more difficult renal biopsy.

DISCUSSION

As the case report shows, cholesterol crystal embolisms can occur spontaneously in the lower extremities either after vascular surgery or translumbar arteriography. Moldveen-geronimus (8) and Bruns (1) think that anticoagulants tend to release crystals by lessening the thrombosis which appears on atheromatous plaques. Feder (3) already had pointed out that anticoagulants have undesirable effects. Nevertheless embolisms can occur in patients not treated with anticoagulants.

Cutaneous cholesterol embolization are preceded by *pain* in the lower extremities. This pain is less acute than that caused by macro-embolisms. Furthermore distal pulses often remain strong. Myalgias (6), restless legs (5) and abdominal pain are possible consequences of visceral embolisms.

Livedo reticularis (7, 8) is the most freqient and telltale lesion (50% of cases). It appears on the legs or feet, less often on the buttocks and the thighs. The livedo heals spontaneously but will recur in the case of another embolism.

Nodules (2, 9, 10) and *indurated plaques* (4, 6) are violaceous, painful, purpuric and can show central necrosis. They occur on the calves and are self-

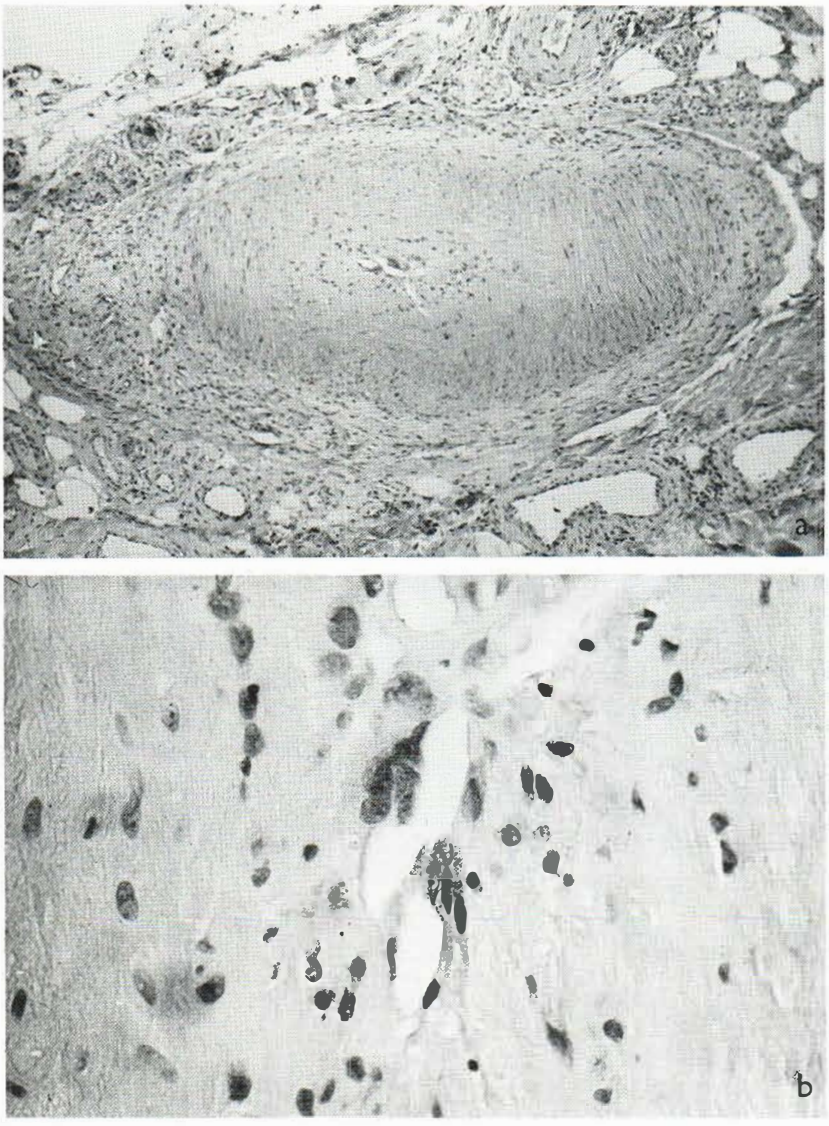

Fig. 3. (*a*) Biopsy of a subcutaneous nodule, showing small artery containing cholesterol clefts. (*b*) Foreign body giant cells around cholesterol clefts.

healing. Their association with livedo reticularis and multiple visceral manifestations can give rise to the misdiagnosis of polyarteritis nodosa (9).

In addition to livedo and nodules, ischaemia changes in the lower extremities, like *purple toes*, *ulcerations* and even *distal gangrene* despite adequate arterial pulses, are direct pointers towards cholesterol embolizations. Cutaneous biopsy allows one to find out the cause of cutaneous lesions and mainly to account for the visceral manifestations possibly associated with them. Some arterioles at the junction between dermis and subcutaneous fat are found to be occluded by biconvex, spear-shaped forms corresponding to cholesterol crystal micro embolisms. If the lesion is older, the lumen of the arteriole will be obstructed by a fibrous tissue and cholesterol crystals surrounded by multinucleated foreign body giant cells. But seldom do the cutaneous biopsies show so typical a histological image: in most cases, one can only observe a recent fibrinous thrombosis; in this case deeper cutaneous biopsies must be undertaken along with a muscle biopsy and a fundoscopic examination for possible retinal embolism (7, 9).

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One Case of Confluent and Reticulate Papillomatosis (Gougerot–Carteaud)

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Abstract. A 16-year-old girl with dark-brown coalescing papules symmetrically localized to the cheeks, is reported. The diagnosis may be consistent with the criteria for confluent and reticulate papillomatosis (Gougerot–Carteaud). The association between this disease and *Pityrosporum orbiculare* is discussed.

Key words: Confluent and reticulate papillomatosis; Tinea versicolor; *Pityrosporum orbiculare*

Confluent and reticulate papillomatosis (CRP) consists of greyish-brown pigmented papules which coalesce to reticulate and confluent patches. The disease was first described by Gougerot & Carteaud in 1927 (2), and only about 50 cases have been reported in the literature. It usually starts shortly after puberty primarily in females and is most often localized to the intermammary and interscapular regions.

The lipophilic yeast *Pityrosporum orbiculare*, the cause of tinea versicolor (1), has earlier been associated with CRP (4, 6). It is still not clear what the role of *P. orbiculare* is in CRP, whether it is the etiological agent, or if CRP represents an abnormal host reaction to *P. orbiculare* (4, 6). In tinea versicolor one sees both the yeast and the mycelial forms of *P. orbiculare*, but in CRP only the yeast form has been reported. The lesions of both tinea versicolor and CRP show a bright yellow fluorescence in Wood's light. Histological examination of CRP shows papillomatosis and hyperkeratosis, while in some areas there may be acanthosis and in others an atrophy of the malpighian layer.

CASE REPORT

A 16-year-old girl was admitted to the department because of brownish lesions on her cheeks of 4 months' duration

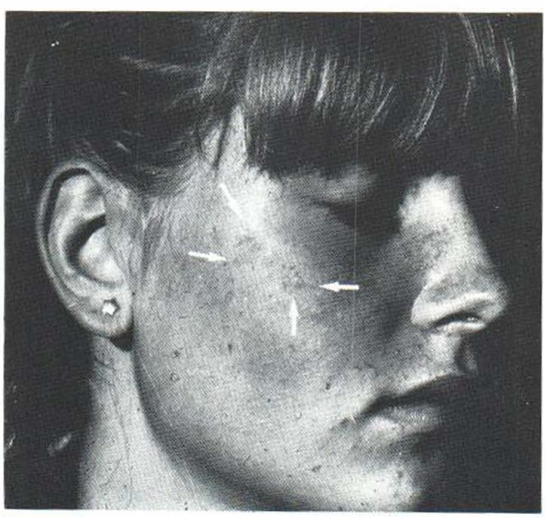

Fig. 1. Hyperpigmented confluent papules on the cheek.