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Abundance of Plasma Cells in a Case of Lipodermatosclerosis

Angel Fernandez-Flores[1], Jose A Manjón[2]

[1]Service of Anatomic Pathology and the [2]Service of Dermatology, Hospital El Bierzo; [1]Service of Cellular Pathology, Clinica Ponferrada, Ponferrada, Spain

Corresponding author:
Angel Fernandez-Flores, MD, PhD
S. Patología Celular, Clinica Ponferrada
Avenida Galicia 1
24400 Ponferrada
Spain
gpyauflowerlion@terra.es

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SUMMARY Plasma cells have been considered as an important morphological clue in the diagnosis of some sclerosing cutaneous diseases such as morphea, so much so that humoral immunology has been suggested to have a role in the pathogenesis of such diseases. Nevertheless, they are hardly ever described as a prominent feature in lipodermatosclerosis in which granulocytes have been claimed as the main pathogenic cell. We report a case of lipodermatosclerosis in a 77-year-old woman, in which plasma cells were abundant in the thickened fibrous septa of the hypodermis. They were highlighted on immunohistochemical study with CD79a, CD138 and EMA, and showed polyclonal immunoexpression of kappa and lambda immunoglobulin light chains.

KEY WORDS: lipodermatosclerosis, hypodermitis sclerodermaformis, pseudoscleroderma, sclerosing panniculitis, plasma cells

INTRODUCTION

Plasma cells are a feature of many sclerosing cutaneous diseases, and they are considered as a clue in their diagnosis (1-8). Nevertheless, they are not claimed as a prominent feature in lipodermatosclerosis. In the latter condition, vascular stasis is many times a basic step in the development of the disease, but the role of leukocytes (mainly neurophils) (9,10) has been claimed as princeps in its pathogenesis. This is in contrast with the role of humoral immunity claimed for other sclerosing diseases such as morphea.

Therefore, we consider it interesting to report a case of lipodermatosclerosis, in which plasma cells were a prominent feature. We want to note that such a clue need not necessarily favor the diagnosis of morphea over other sclerosing cutaneous diseases.

CASE REPORT

A 77-year-old woman presented for consultancy at Dermatology complaining of a lesion on her right leg, which she had noticed several months before. She had no other diseases.

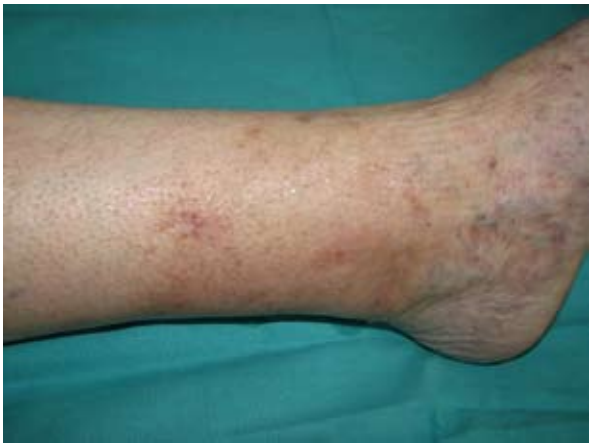

Figure 1. Clinical picture showing erythematous lesion on the external side of the right leg.

The examination showed a reddish, indurated, slightly elevated area on her right leg (Fig. 1). Zones of vascular stasis were evident in both legs, with varicose lesions in both feet. A biopsy of the indurated area was performed.

Pathologic findings

Microscopic examination showed fibrosing dermatitis and panniculitis (Fig. 2). The upper part of the dermis showed a marked increase in the number of thick-wall vessels (Fig. 3, top left). Hypodermal septa were wide with thick bundles of collagen in them (Fig. 3, bottom left). Areas of lipomatous pseudomembranes were easily found (Fig. 3, top right), which stained with periodic acid of Schiff (PAS) (Fig. 3, bottom right). Iron deposits were mild in the dermis and abundant in the thickened septa of the hypodermis (Fig. 4). The inflammatory infiltrate of the septa was predominantly chronic, with a predominance of plasma cells (Fig. 5). The latter stood out with immunohistochemical stains for epithelial membrane antigen (EMA) (DakoCytomation, monoclonal mouse anti-human antibody, clone E29, code M0613), CD79a (DakoCytomation, monoclonal mouse anti-human antibody, clone JCB117, code M7050) and CD138 (DakoCytomation, monoclonal mouse anti-human antibody, clone MI15, code M7228) (Fig. 5). The immunohistochemical expression of kappa and lambda chains of immunoglobulins (DakoCytomation, monoclonal mouse anti-human kappa light chain, clone R10-21-F3, code N1568; and polyclonal rabbit anti-human lambda light chain, code N1513) showed a polyclonal pattern (Fig. 6).

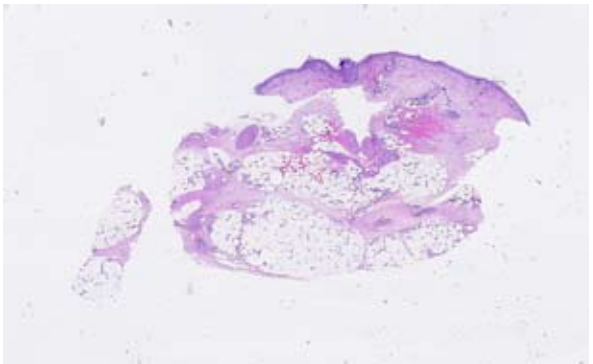

Figure 2. Low power view of the biopsy specimen showing sclerosing dermatitis and panniculitis.

None of the vascular structures expressed HHV-8 on immunohistochemical study (Novocastra, clone 13B10).

The definitive diagnosis was lipodermatosclerosis.

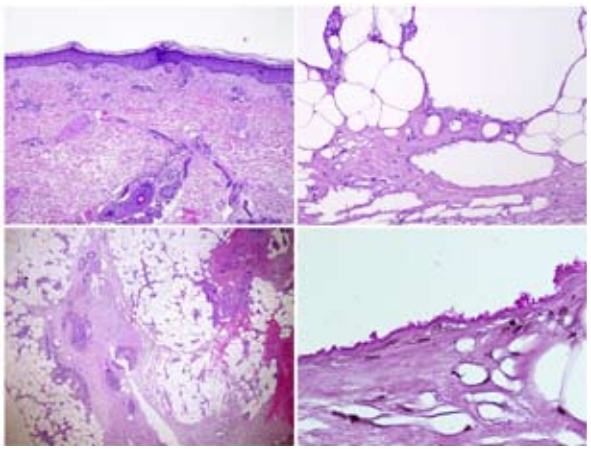

Figure 3. Top left: fibrous dermatitis with dermal vascular changes typical of vascular stasis; bottom left: the hypodermis showing thickened fibrous septa; top right: lipomatous pseudomembranes were easily found. They were highlighted with PAS staining (bottom right).

DISCUSSION

Lipodermatosclerosis has been known in the literature under many other terms like hypodermitis sclerodermaformis (11), pseudoscleroderma or sclerosing panniculitis (12). The latter is the preferred term by some authors (12), under the premise that it is actually a type of panniculitis (13).

The pathogenesis of the disease has not been fully understood, however, chronic venous insufficiency seems to play an important role (14-17). In fact, in a long series of patients with lipodermatosclerosis most of them presented venous abnormalities, of which deep vein incompetence was most common (present in nearly half of them)

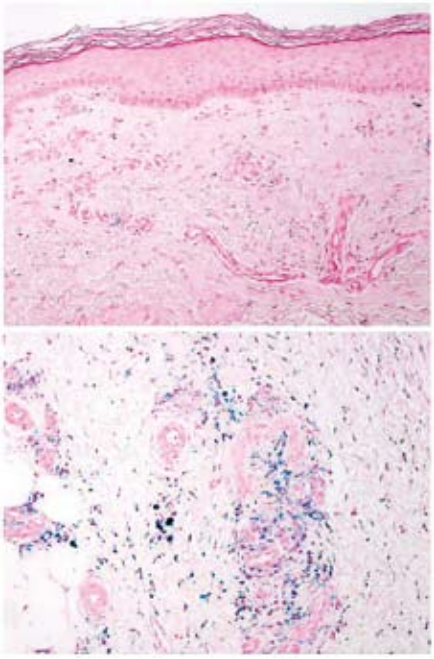

Figure 4. Iron deposits were mild in the dermis, but prominent in the fibrous hypodermal septa.

(12). Even in patients with normal venous imaging studies, venous hypertension is mentioned as a possible factor in the disease development (12).

Among typical morphological features of the entity, most significant are thickening of the pannicular septa due to fibrosis, pseudomembrane formation, and mild inflammatory infiltrate. The role of inflammatory cells in lipodermatosclerosis has been widely described in many reports (18-21). Nevertheless, they are mostly centered on leukocytes other than plasma cells (22), mainly granulocytes (9,10). Plasma cells are mentioned

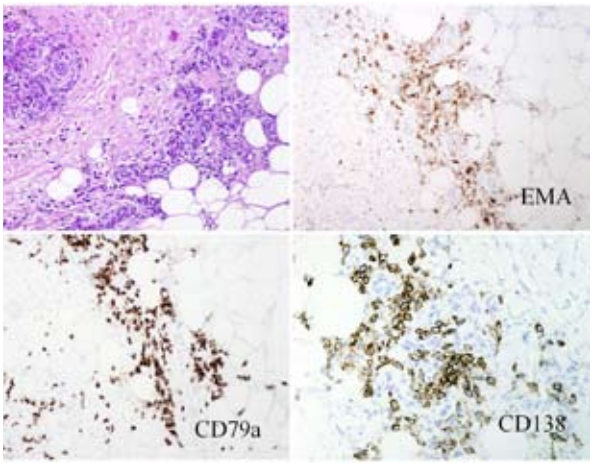

Figure 5. The inflammatory infiltrate of the fibrous septa was rich in plasma cells (top left). The plasma cell population expressed EMA (top right), CD79a (bottom left) and CD138 (bottom right).

as a component of the inflammatory infiltrate in fatal cases of venous insufficiency, under the edges of ulcerated lesions (23).

There is a theory known as “the white cell trapping” (24,25), stating that trapped leukocytes from the microcirculation release proteolytic enzymes (26). Leukocytes would get trapped due to several factors, e.g., prolonged standing, obesity, physical inactivity and genetic susceptibility (27). Leukocyte products would therefore be responsible for the endothelial damage, fibrin deposition and necrosis (28,29). The extravascular deposition of fibrin stimulates tissue fibrosis, which manifests as lipodermatosclerosis (30). This is worsened by the fact that the fibrinolytic activity of the blood and tissues is deficient in patients with lipodermatosclerosis (31). This is in contrast with the role of humoral immunity suggested in the development of other sclerosing diseases such as morphea, because of the evidence of abundant plasma cells in them (8).

It is interesting to mention that some authors distinguished an acute phase from the chronic one in lipodermatosclerosis (15). While venous insufficiency would be responsible for the acute

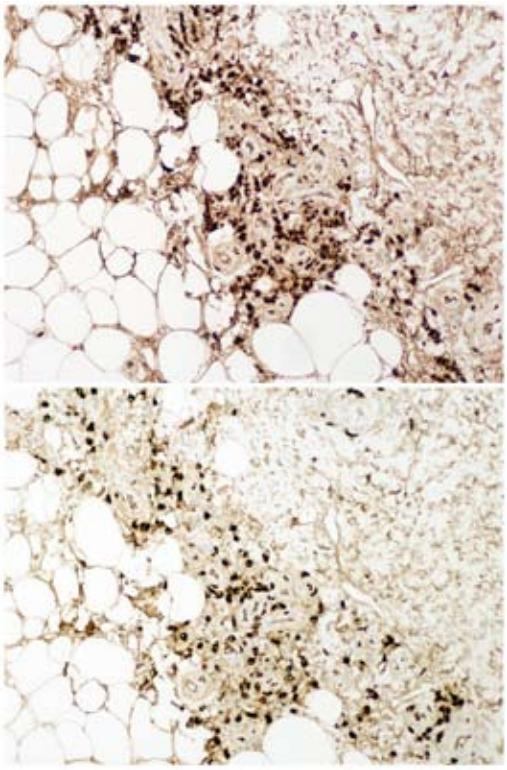

Figure 6. The immunohistochemical study for immunoglobulin light chains showed polyclonal expression of kappa (top) and lambda (bottom) chains.

phase, the chronic one would only develop as a post-phlebitic process. For some, only recurrent episodes of streptococcal cellulitis would lead to the sclerosing phase (32).

Even in morphological descriptions regarding lipodermatosclerosis, plasma cells are rarely mentioned as a main component of the inflammatory infiltrate. Some reports on lipodermatosclerosis mention that plasma cells are scattered (16,33). Nevertheless, they are not considered as frequent as in other sclerosing diseases such as morphea, scleromyxedema or eosinophilic fasciitis (34). In the latter sclerosing diseases, plasma cells are often a diagnostic clue (1-7,35). Linear scleroderma can even present as plasma cell panniculitis (36). Although some of these conditions can show marked vascular alterations (5), they are very different from those found in lipodermatosclerosis.

In conclusion, although plasma cells are traditionally considered as an outstanding feature in sclerosing diseases other than lipodermatosclerosis, we report a case with all the morphological clues typical of lipodermatosclerosis, in which such cells were abundant.

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