Livedo Vasculopathy Associated with IgM Anti-phosphatidylserine-prothrombin Complex Antibody

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Livedo vasculopathy (LV) is a chronic recurrent disease affecting the lower extremities, clinically developing livedo reticularis, purpuric macules, painful ulcers, hyperpigmentation and atrophic scars (1). Histopathologically, there are segmental hyalinization and thrombosis of the dermal blood vessels with a mild perivascular lymphocytic infiltration in the absence of leukocytoclasis (2). Its pathogenesis is unknown, but many reports have suggested that it is an occlusive thrombotic process due to coagulation system abnormalities. We report here a patient with LV who had IgM anti-phosphatidylserine-prothrombin complex (anti-PS/PT) antibody.

CASE REPORT

A 30-year-old Japanese woman presented with a 5-month history of painful purpura, hemorrhagic vesicles and pigmented spots involving her lower legs and dorsa of the feet. Histopathologically, there were microvascular thrombi and hyalinized changes in the deep dermal blood vessels with some nuclear dusts. Her condition improved with oral aspirin (81 mg/day for 8 months). However, 6 months after cessation of this therapy, the painful purpuric lesions recurred, gradually followed by the development of deep painful ulcers covered with an adherent exudate over the course of 4 months (Fig. 1a and b). Histological features of the second biopsy specimen were the same as those of the initial one (Fig. 2). This time, they were refractory to aspirin treatment. However, with the initiation of anticoagulant therapy with warfarin sodium (4 mg/day) they improved dramatically within 2 weeks. The results of the laboratory investigations, including anti-nuclear antibody, serum complement levels, anti-neutrophil cytoplasmic antibody, cryogloblin level, cold agglutinin, prothrombin time, partial thromboplastin time, homocysteine, protein C and S levels, lupus anticoagulant (LAC), immunoglobulin (Ig)M, IgA, IgG anti-cardiolipin antibodies, anti-β_2-glycoprotein-I-dependent cardiolipin (anti-β_2 GPI/CL) antibody and IgG anti-PS/PT antibody, were all negative or within normal limits, except for the presence (17 U/ml) of IgM anti-PS/PT antibody (normal <12 U/ml) (3). IgM-anti-PS/PT was measured using a modified "PS/PT enzyme-linked immunoassay (ELISA) kit" supplied commercially by MBL (Nagoya, Japan). Briefly, horse-radish peroxidase (HRP)-labelled anti-human IgM-antibody was used instead of anti-human IgG-antibody. The antibody was measured in 100 healthy

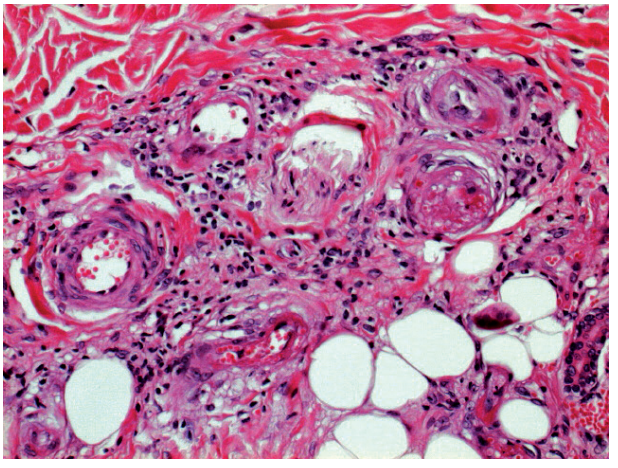

Fig. 2. Histopathologically, hyalinization and thrombosis of the small blood vessels was seen in the deepest portion of the dermis, accompanied by mononuclear cell infiltration and some nuclear dusts (haematoxylin and eosin ×200).

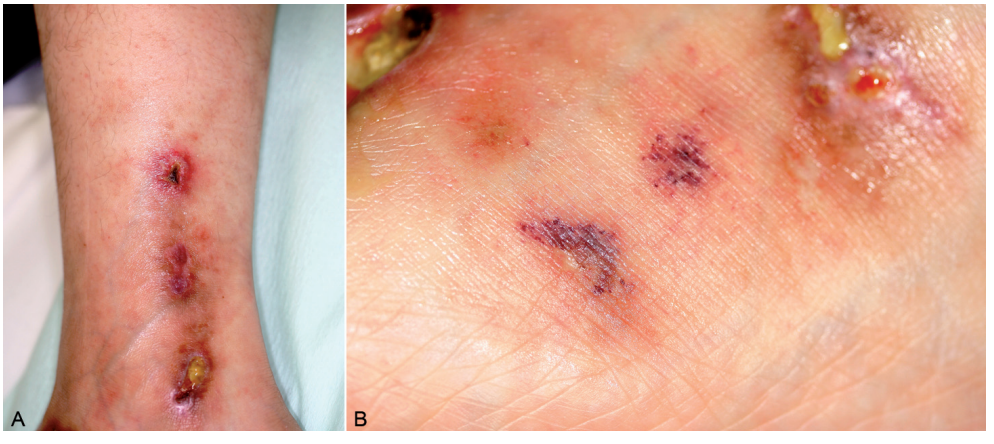

Fig. 1. (a and b) Scattered well-demarcated ulcers together with scars, hyperpigmented spots, and purpuras on the legs, medial and lateral malleoli and dorsal surfaces of the feet.

volunteers, and the cut-off value was set as less than the mean + 2 SD.

Although the pathogenesis of LV is unknown, the formation of multiple thrombotic changes is thought to be implicated in its development because of the successful results of anticoagulant therapy, as noted in our present patient. In the present case, the presence of anti-PS/PT antibody seemed to be pathogenetically related to the patient's LV. Furthermore, histopathologically we found a few scattered nuclear dusts around the hyalinized deep dermal vessels, which have not been reported previously in this dermatosis.

DISCUSSION

Cutaneous ulceration and necrosis have been described in association with circulating LAC and LAC has also been reported in patients with LV (4). Anti-PS/PT antibody is one of the antiphospholipid antibodies reactive against the phosphatidylserine-prothrombin complex and a major component of LAC with anti-β_2 GPI/CL antibody (5). Kawakami et al. (3) have suggested that cutaneous polyarteritis nodosa (CPN) is pathogenetically dependent on the presence of anti-PS/PT antibody, based on their findings that anti-PS/PT antibody was present in 13 (81%) of 16 CPN cases (19.9 ± 12.4 U/ml) but in none of the normal individuals. Most of all, they noted a significant correlation between IgM anti-PS/PT antibody and C-reactive protein (CRP) level in their CPN patients. Further studies of this antibody in LV patients are awaited.

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The authors declare no conflict of interest.

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