CASE REPORT

Association between the synthetic vascular stent used for abdominal aortic aneurysm and generalized granuloma annulare

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ABSTRACT

The etiology of granuloma annulare (GA) remains unknown, although several eliciting factors have been proposed. We herein present the case of an 81-year-old man who developed generalized erythematous annular plaques 6 months after engraftment of a vascular stent for abdominal aneurysm repair. Based on the diagnosis of generalized GA and the patient’s age, we treated him with psoralens plus ultraviolet A therapy. The treatment response was good. This is the first report showing the association between vascular stent and generalized GA.

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Introduction

The etiology of granuloma annulare (GA) remains unknown, although several eliciting factors have been proposed. We present the case of an 81-year-old man who developed generalized erythematous annular plaques 6 months after engraftment of a vascular stent for abdominal aneurysm repair. Based on the diagnosis of generalized GA and the patient’s age, he was treated with psoralens plus ultraviolet A (PUVA) therapy. Good response was achieved following the therapy.

Case report

An 81-year-old man developed generalized asymptomatic papules and plaques on his elbow, back, forearms, and chest, which had persisted for 6 months. He had no recent contact or major incidents related to this presentation. The levels of tumor markers, including carcinoembryonic antigen, alpha-fetoprotein, and prostate-specific antigen, were all within normal limit. The patient had hypertension, which was under regular medical control [amlodipine (5 mg) and isosorbide (30 mg/day)] for more than 5 years without any change in the treatment regimen. However, chest and abdominal computed tomography revealed no occult malignancy except a rapidly growing abdominal aortic aneurysm. He received endovascular aneurysm repair, during which a 28-mm endovascular stent graft (Gore Medical Products, Flagstaff, AZ, USA) was inserted in January 2013. Six months later, skin lesions started to develop. Dermatological examination revealed multiple discrete, small, flesh-colored to erythematous annular plaques with central involution on the trunk and limbs (Figure 1A–C). Skin biopsy showed multiple noncaseating, palisading granulomas with central necrosis from the superficial to deep dermis with surrounding infiltrates of histiocytes, multinucleated giant cells, and few lymphocytes (Figure 2). Mucin deposition was evident on hematoxylin–eosin and Alcian blue staining. Generalized GA was diagnosed. Considering the diffuse nature of the lesions and the patient’s age, he was treated with PUVA therapy (oral methoxsalen 20 mg three times weekly and UVA). Good response was achieved after 16 treatments with a cumulative dose of 58.5 J/cm² (Figure 3). No recurrence was observed from 10 months of follow-up to date.

Discussion

GA is usually a self-limiting disease. At present, the etiology of GA remains unknown, although several eliciting factors such as trauma, drugs, and infections have been reported.1,2 Generalized GA is a rare variant among all subtypes.3 In particular, generalized GA has been reported to be associated with diabetes mellitus, dyslipidemia, chronic hepatitis C infection, autoimmune thyroid...
diseases, sarcoidosis, and various cancers. The association between microangiopathy, autoimmune vasculitis, and abnormal delayed-type hypersensitivity (DTH) in generalized GA suggests the involvement of abnormal T-cell and granulation responses to certain external and/or self-antigens. In this case, the patient underwent vascular graft placement 6 months before the skin eruptions developed. The graft placed within the vessel was composed of thromboresistant heparin coating on the luminal side, along with a synthetic vascular stent. The drug coating on the stent and/or the metallic content of the stent could trigger DTH. In fact, various reports suggest that cutaneous adverse hypersensitivity reactions occur in around 7.5% of patients receiving heparin treatment. Among these, DTH is the most common skin reaction related to

Figure 1 (A) Multiple annular erythematous plaques on the forearms. (B) Numerous annular plaques on the back. (C) A closer look showed the annular erythematous plaque with elevated border.

Figure 2 Skin biopsy showed characteristic palisading granuloma with central necrobiosis admixed with mucinous stroma (hematoxylin and eosin stain, 40×).

Figure 3 The skin lesions were barely visible 10 months after the psoralens plus ultraviolet A therapy.
heparin use. Therefore, the interaction between the bioactive graft and the host immune system might have generated hypersensitivity and granulomatous responses to form the granulomas. Based on the literatures reviewed, this is the first report of a generalized GA associated with synthetic vascular stent implantation.

Treatment of generalized GA should be directly based on patient’s age, sites of involvement, and host immune status. PUVA, in oral and bath forms, has been evaluated and proven to be effective for generalized GA in antecedent reports. The success of PUVA therapy in our case may be credited to the immunomodulatory mechanism affecting the inflammatory cells, keratinocytes, and fibroblasts.

Conclusion

The case has offered a possible association between generalized annulare and synthetic vascular stent for abdominal aneurysm repair. The case also emphasized the good efficacy and safety of PUVA as a successful treatment option.

References