CASE REPORT

Successful Treatment of Recalcitrant Livedoid Vasculopathy with Rivaroxaban: A Case Report

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ABSTRACT

Livedoid vasculopathy (LV) is a rare, chronic dermatological condition with occlusion of dermal vessels leading to recurrent purpuric lesions and painful ulcerations on the lower extremities. Its pathogenesis remains unclear and management is challenging. This case report discusses a 72-year-old woman with a two-year history of painful retiform purpura and persistent ulcerations on her right lower leg, resistant to treatments including oral prednisone, acetylsalicylic acid, pentoxifylline, antibiotics, vasodilators, immunosuppressants, compression stockings and debridement. Laboratory investigations, hypercoagulability profile and thrombophilia screening were unremarkable. Histopathology revealed occluded superficial dermal vessels with intraluminal fibrin deposition and minimal inflammation. Treatment with Rivaroxaban 20 mg orally once daily lead to significant improvement after 2 months with healed ulcerations and no new lesions or any signs of infection. The medication was continued for seven months resulting in pain free and ulcer free state, though mild dyspigmentation persisted. This study suggests Rivaroxaban's potential in managing recalcitrant LV.

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INTRODUCTION

Livedoid vasculopathy (LV) is a rare, persistent and debilitating dermatological condition characterized by dermal vessel occlusion, causing recurring purpuric lesions that are accompanied by painful ulcerations on the lower extremities [1]. The lesions typically heal with atrophic, porcelain-white scarring referred to as atrophie blanche. This dermatological condition has a female predisposition and commonly affects the lower legs and ankle region. Although studies have not fully established the pathogenesis of LV, it is hypothesised that it occurs as a result of inflammation, endothelial dysfunction, and hypercoagulability.

LV diagnosis and management often requires a multidisciplinary team approach, including experts from the field of dermatology, rheumatology and pathology. A confirmatory diagnosis can be made by taking a detailed history, performing a good clinical examination, and analysis of the skin biopsy reports [1]. Typical histopathological findings of the skin biopsy include intraluminal fibrin, deposition, endothelial proliferation, and minimal inflammation.

Treatment modalities recommended for LV include medications such as immunosuppressants, anticoagulants, vasodilators, and antiplatelet medicines combined with supportive measures for wound care. Despite undergoing extensive treatment with these modalities, patients often continue to experience excruciating pain and have minimal response to the treatment provided probing the need for a newer line of management of LV. Rivaroxaban which is a direct oral anticoagulant has shown efficacy in the management of LV in recent studies [2]. It works by inhibiting factor Xa leading to enhancement of microvascular perfusion and reduced development of fibrin clots.

This case study explores the management of an elderly female with refractory LV who showed no improvement with conventional treatments but attained remission with oral Rivaroxaban.

CASE REPORT

A 72-year-old female presented to the dermatology OPD with a 2-year history of painful, violaceous, retiform macules and papules on the right lower extremity, accompanied by chronic ulcerations and scarring. The severe pain resulted in impaired mobility, limited participation in daily activities and social interactions, and heightened psychological stress. The patient's medical history included systemic hypertension, and diabetes mellitus for which she was being treated with amlodipine and metformin. She also gave a past surgical history of L5-S1 anterolisthesis, malunited fracture of the right 2nd toe, and cataract surgery in both eyes. The patient did not have any previous history of venous thrombosis, recurrent miscarriages or strokes. Family history revealed no significant findings.

Treatment history revealed that there was no improvement in perceived pain or physical findings despite treatment with oral prednisone, acetylsalicylic acid, and pentoxifylline for 6 months. During this period, the patient continued to have numerous ulcerations with development of cellulitis of her lower extremity which required frequent hospitalization and treatment with intravenous antibiotics. Narrow-band UVB therapy was also attempted between infectious episodes, but no improvement was observed, highlighting the refractory nature of her condition to conventional treatment modalities.

On examination, the patient's vitals were stable and systemic examination was normal. Local cutaneous examination of the right leg and ankle revealed well-demarcated punched-out ulcers and atrophic ivory scars in a livedoid distribution (Fig. 1). The soles, oral cavity, genital mucosa, hair and nails were normal and no generalised lymphadenopathy was observed. Routine laboratory investigations, and blood workup done for hypercoagulability, cancer, and autoimmune conditions were unremarkable.

Histopathological examination of the biopsy sample taken from the right ankle showed occluded superficial dermal vessels with intraluminal fibrin deposition, a crucial feature in livedoid vasculopathy. There was mild inflammation, and epidermal ulceration (Fig. 2). This, along with the key clinical features of LV such as painful, retiform purpura and persistent ulcerations, and the classic findings of punched-out ulcers and atrophie blanche, clinched the diagnosis of LV.

The patient was started on oral Rivaroxaban 20 mg per day prescribed once daily. The patient showed significant symptomatic and clinical improvement at the 2-month follow-up visit (Fig. 3). The patient was pain-free and examination showed no new lesions or infections with marked healing of previous ulcerations and marked reduction in psychological distress. After 9 months of treatment with the same medication, the patient remained pain-free and ulcer-free with only mild residual dyspigmentation. Routine coagulation monitoring (prothrombin time, international normalized ratio, and activated partial thromboplastin time) and other laboratory tests were normal while on Rivaroxaban. No adverse event was noted during the course of the treatment.

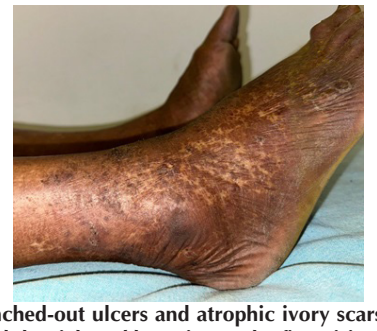

Figure 1: Punched-out ulcers and atrophic ivory scars in a livedoid pattern around the right ankle region at the first visit.

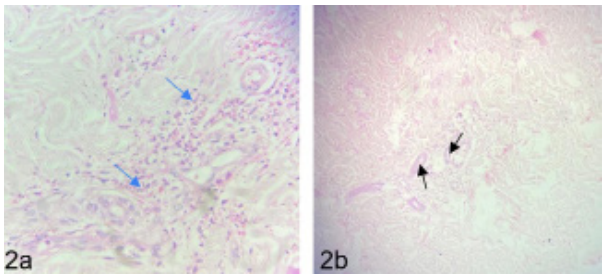

Figure 2: 2a displays histological characteristics such as perivascular inflammation in the dermal vessels (blue arrows); 2b depicts intraluminal fibrin deposition in the dermal vasculature (black arrows).

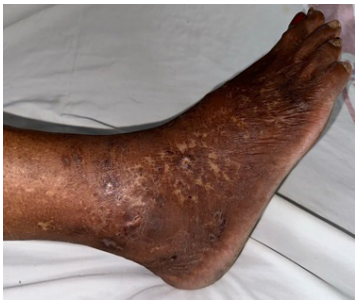

Figure 3: Healing of prior ulcerations post-treatment with no new lesions.

DISCUSSION

LV is a challenging condition to diagnose and manage and it often leads to significant morbidity and reduced quality of life of the affected patients [1]. The number of cases resistant to conventional treatment of LV has risen over the years, which has led to research on using atypical medications as a newer line of treatment for the same. Rivaroxaban which is a factor Xa inhibitor has been used in recent studies for its effectiveness in the management of resistant LV. Several case reports and case series have established the efficacy of Rivaroxaban in treating LV.

A systematic review and meta-analysis by Gao et al. highlighted the efficacy of Rivaroxaban in treating LV [3]. The review paper included 13 studies comprising a total of 73 patients who had received oral Rivaroxaban at a dose of 10-20 mg daily. Among the patients, 82.2% had achieved remission of both pain and ulceration, limited side effects with good improvement in overall quality of life.

Weishaupt et al. conducted the benchmark RILIVA trial which was a multicentre, single-arm, open-label, phase 2a proof-of-concept trial [2]. The study participants included 25 patients with refractory LV who were treated with Rivaroxaban. The majority of the patients in the study showed improvement in ulcer healing and a considerable decrease in pain. At the 12-week mark, 76% of the patients had pain reduction by at least 50%, and 56% of them had fully healed ulcers. Although the majority of patients in the RILIVA trial experienced no noteworthy adverse events, few incidences of menorrhagia, dysmenorrhea, and gingival bleeding were reported.

Deng et al. investigated the effects of long-term administration of Rivaroxaban in improving clinical outcomes in LV [4]. Out of the 34 cases treated with 10 mg of the drug daily, 67.6% of the patients achieved 50% improvement after 2 months of treatment. After the completion of 9 months of therapy, 10 patients did not have any recurrences over the total follow-up period of 17.5 months. The study also reported the adverse effects associated with use of Rivaroxaban; two patients reported haematochezia and six patients experienced hypermenorrhoea.

A study conducted by Turpie et al. evaluated the efficacy of Rivaroxaban in treating patients with thromboembolism [5]. The study showed that an increased risk of bleeding, mainly in renal impairment patients was noted with concurrent use of other anticoagulants or antiplatelet medications. This study further warrants the use of Rivaroxaban as monotherapy in treating patients to prevent adverse outcomes.

In our patient, Rivaroxaban led to rapid and significant improvement, marked by substantial pain relief, complete healing of previous ulcerations, absence of new lesions or infections, and marked reduction in psychological distress. No adverse events occurred during the course of the treatment. This outcome aligns with its documented efficacy in enhancing microvascular perfusion and preventing fibrin clot formation, as reported in other cases of refractory livedoid vasculopathy. However, residual mild dyspigmentation remained in the affected areas, suggesting some degree of permanent cutaneous damage despite the successful resolution of active disease. This persistent dyspigmentation is a common feature in livedoid vasculopathy and reflects the long-term impact of chronic vascular compromise.

Despite the concerns and possible adverse effects noted with the use of Rivaroxaban, it is still a promising drug for the management of LV cases particularly in patients resistant to conventional treatment. Its advantages lie in easy administration, optimal efficacy and good patient compliance. While this study used this drug as monotherapy, future studies can focus on using this drug in combination with other medications such as immunosuppressants or antiplatelet drugs that may enhance clinical outcomes in patients with resistant LV. Furthermore, longitudinal studies with control groups can be conducted with a large diverse population to truly understand the effectiveness of using Rivaroxaban as monotherapy in patients with resistant LV.

CONCLUSION

LV is a complex condition to diagnose and manage, and many patients do not respond to conventional medications. This case report suggests Rivaroxaban as a monotherapy treatment, prescribed at 20 mg once a day in patients with resistant LV. Future research is necessary to fully evaluate the optimal dosage, duration and long-term safety and efficacy of this drug in treating patients with persistent LV.

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