LIVEDOID VASCULOPATHY AND POLYMORPHIC LIGHT ERUPTION: A CASE REPORT

Sunanda Nandikol [1*],Chaithra L [1],Virupaxappa Biradar[2]

[1]Assistant Professor, Dept of Pharmacy Practice, BLDEA's SSM College of Pharmacy & Research Centre*

[1] Pharm D intern BLDEA's SSM College of Pharmacy & Research Centre, Vijayapura

[2] Dept of Medicine, Shri.B.M.Patil Medical College & Hospital,Vijayapura

ABSTRACT

Introduction:

Livedoid vasculopathy (LV) is a rare, chronic thrombo occlusive vascular disorder first described by Miliam, that is typically characterized by chronic and painful ulcers on bilateral lower limb or lower extremities, which heal slowly and leave an atrophic white scar "atrophie blanche". ***Case description:*** A 56 years old male patient presented with the complaint of wound over the bilateral lower limbs since 3 months associated with pain. He has been started on rivaroxaban therapy from outside hospital since 1 month for the similar complaints.. ***Discussion and Conclusion:*** The treatment of LV consists of pain management, wound care, medications that treats blood clot related problems which cause the ulcers and the medications which suppress the immune system. The early and correct diagnosis as well as appropriate therapy is essential for the prevention of acute ischemia and also long term consequences like chronic pain syndrome and dysaesthesia.

INTRODUCTION

Livedoid vasculopathy (LV) is a rare and chronic thromboocclusive vascular disorder characterized by impaired blood flow in the small blood vessels of the skin, leading to the formation of painful ulcerations and a distinctive mottled, purplish discoloration known as livedo reticularis. The condition primarily affects the lower extremities and is often associated with recurrent episodes. It was first described by Miliam.(1) The ulcers on bilateral lower limbs or lower extremities, which heal slowly and leave an atrophic white scar called "atrophie blanche"(2). It was previously described as an atrophy blanche. LV was also known as 'livedo vasculitis', 'livedoid vasculitis', 'livedo reticularis with summer ulceration' 'segmental hyalinizing vasculitis', and 'painful purpuric ulcers with a reticular pattern of the lower extremities (PURPLE)'(1) (3). It is now clear that it is not primarily vasculitis (inflammation of the blood vessel wall), but due to occlusion of small blood vessels, hence the name changed to livedoid vasculopathy (LV).

The characteristic intraluminal thrombi as well as the response to anticoagulation therapy support the theory that thrombotic or microcirculatory mechanisms might be acting in the pathogenesis of LV, not vasculitis, so that McCalmont, Jorizzo, and colleagues first proposed the term livedoid vasculopathy in 1992 [(4)].

The incidence of LV is around 1 in 1,00,000 people per year [(1) (5).] The disorder often manifests in adults, with a slight predominance in females. While it can affect individuals across a range of ages, it is more frequently diagnosed in adulthood. The incidence ratio between females and males is 3:1, which is three times more common in females than in males, especially those who are between 15 and 50 years of age.[(1) (5)] It can occur in individuals of any ethnicity, but there may be variations in its prevalence among different racial and ethnic groups. It is reported more frequently in individuals of Caucasian descent. If it comes to geographical distribution cases of LV have been reported worldwide, but there may be differences in its occurrence across geographical regions. The rarity of the condtion may contribute to variations in awareness and diagnosis.

The exact causes remain elusive, but genetic predisposition, hypercoagulable states, and autoimmune factors may contribute. LV is usually associated with phenomena that cause hypercoagulability and thrombus formation, including conditions associated with stasis like venous hypertension of limbs or varicose veins. LV is challenging to diagnose due to its multifactorial nature, involving vascular abnormalities, coagulation disturbances, and potential immune system involvement. The exact cause of LV remains unclear, contributing to the complexity of its diagnosis and treatment. The exact cause of LV is unclear; various theories have been published referring to abnormalities within the blood vessel wall and in circulating blood. It is found that several different abnormalities may lead to clotting within the small blood vessels of the lower limb. The thrombi results in necrosis of overlying skin and ulceration. And there is no primary vasculitis[(6)]. Chronic ulcers may result into complications like secondary infections, scarring, and, in severe cases, tissue loss.

LV can be classified as primary (idiopathic) or secondary due to coagulation. Although the exact pathogenesis of LV is unclear at present [(2) (7),] it is thought to involve alteration in either increased local or systemic thrombotic activity or decreased fibrinolytic activity, which can disturb the pattern of coagulation and lead to the formation of fibrin thrombi within superficial dermal blood vessels, which results in a hypoxic condition in the affected area of the dermis, leading to poor wound healing and thus enhancing the risk of infection. LV may appear to be associated with any conditions related to stasis, autoimmune connective tissue diseases, thrombophilias, or neoplasms.[(1), (2),] (7). It has been reported that inflammatory cytokines, such as tumor necrosis factor-α (TNF-α), regulate the expression of genes affecting endothelial cells and induce the production of plasminogen activator inhibitor (PAI)-1. So TNF-α may also be involved in the occurrence of LV(8).

The clinical presentation of LV is painful purpuric eruptions and ulcerations, which are mainly on the lower extremities. After 3 to 4 months of healing, the lesions leave an atropic white scar known as “atrophie blanche,” which is a characteristic feature of LV, and the violaceous netlike pattern of the skin is commonly present in LV, which is called Levido racemosa(7).

CASE REPORT

A 56 years old male patient presented with the complaint of a wound over the bilateral lower limbs since 3 months associated with pain. The patient was apparently alright 3 months ago then he developed brown lesions and wounds over his lower legs, which gradually increased in size and depth. The lesions showed little tendency to heal. Presented history of pain in b/l legs since 3 months moderate to severe in nature increases on walking and reduces on rest and on medications; history of fever since 23 days; history of lesions over the neck and b/l hands and forearms since 1 week; photosensitivity present over the nape of neck lesions; and he was not allergic to any drugs.

The patient had a history of trauma to the right leg three years ago (a motorcycle accident) and underwent surgery for the same. He is a known case of diabetes and hypertension and has been on metformin 500mg, glimipiride 1 mg, and telmisartan 20mg since 3 months. And for a history of similar complaints, the patient has taken oral rivaroxaban from outside since 1 month.

General Examination: Weight is 94 kg. Medial pterygium is present over the b/l eyes. Pitting edema is present over the b/l feet and 1/3rd of the lower limb, and left mandibular lymphadenopathy is present.

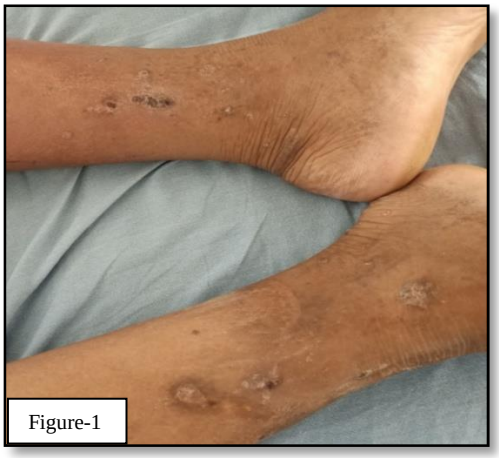
Figure-1

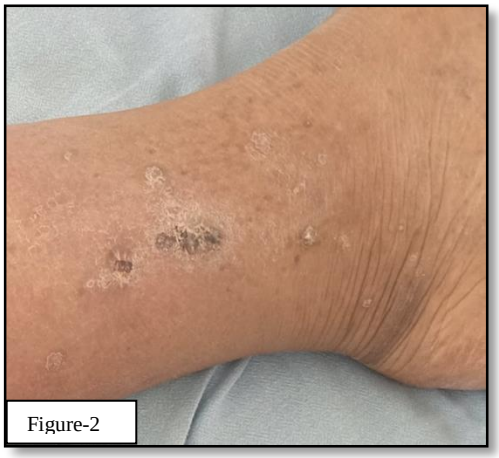
Figure-2

Figure 1&2 Livedo recemosa with atropic scar

Cutaneous examination: solitary, well-defined punched-out ulscer (Figs. 1 and 2) with a base formed by granulation tissue and surrounding erythema present over the right lower 1/3rd leg. Multiple well-defined papules, plaques, and a few pustules are predominantly present over the anterior lower 1/3rd of the b/l leg, and a few well-defined skin-colored atropic scars with telangectasia are present over the b/l feet. Multiple well-defined papules to plaques with surrounding hyperpigmentation over the b/l hands (dorsum), right elbow, and nape of the neck suggest Polymorphus light eruption (PMLE).

The patient was admitted to the dermatology male ward. All the necessary investigations have been performed. Venous Doppler was normal, and CT and BT were also in the normal range. In CBC, there was a mild decrease in MCH, MCV, platelet count, and HB, which was indicative of a mild anemic condition. There was a decrease in lymphocytes (9.9), eosinophils (0.4), and neutrophils (85.3) and WBC (11.2), all of which indicate the presence of infection.

A culture report of pus was obtained after the 3 days of admission, where there was a sensitivity and a Methicillin-resistant Staphylococcus aureus organism was found. PPBS was 211 mg/dl, FBS was 116 mg/dl, and HbA1c was 7.7%, and all other parameters were within the normal range. He has been previously done with the skin biopsy based on which the patient was diagnosed with LV and started on the treatment with rivaroxaban.

The patient was treated with Inj. DYNALIX 40mg (Enoxaparin) given twice a day for 7 days, then it was replaced with Tab. RICOSPIRIN 10mg (Rivaroxaban). Fever was managed with paracetamol, Tab. GLYCOMET-GP1 (Metformin 500mg + Glimipiride 1 mg) given twice a day for 3 days to treat DM, and then it was replaced with Tab. Diapride M1 LV (Glimepiride 1mg + Metformin 500mg + Voglibose 0.2 mg) as the patient blood glucose values were not in the normal range. Tab. TELMIKND 20 mg is used for hypertension. Inj. Augmentin 1.2 g (Amoxycillin 1000mg + Clavulanic Acid 200mg) given for 3 days twice a day as an empirical therapy after receiving a culture report Inj. LINID 600 mg (Linezolid) was started and given for 7 days. Tab. TOLPA-D (Diclofenac 50mg + Serratopeptidase 10mg) was given to manage the pain. DIPROBATE LOTION (Betamethasone 0.05% w/v + Zinc Sulfate 0.5% w/v) has been given for local application (over the arm and neck lesions), and BETADINE GARGLE (Povidone Iodine 2% w/v) was advised three times a day for submandibular lymphadenitis. The patient was advised with foot end elevation and a diabetic diet. After linzolid therapy, pus was sent again for a culture sensitivity test; the culture was sterile after 48 hours of aerobic incubation. Patient condition improved and she got discharged from the hospital with the above-prescribed medication along with SUNSTOP 30 SPF lotion for local application (over sun-exposed areas).

DISCUSSION

LV is a rare or orphan disease, and it commonly affects middle-aged women, but in this case, a 56-year-old male patient got affected by LV. It can limit the affected patient's quality of life. LV is believed to be mediated by dysfunction of coagulation or fibrinolysis. The main risk factors for thrombosis may be endothelial damage, changes in blood flow, and blood disorders, which can lead to hypercoagulability(7). In LV, the dermal vessels occlude vasculopathy, leading to ischemia and massive pain in the lower extremities, especially the lower limb[(4)]. Many other conditions can cause ulcerations of the skin in the lower limbs and are more common than LV. The conditions include diabetes, chronic venous insufficiency, and peripheral artery disease. Therefore, it is important to look out for these conditions before confirming the diagnosis of LV. The involvement of neurological system in LV is rare as per report of literature [(5) (7) (9)]

Diagnosing LV is challenging and typically involves a combination of clinical evaluation, skin biopsies, and laboratory tests like, **Coagulation Studies:** Assessment of coagulation factors, including activated partial thromboplastin time (aPTT) and prothrombin time (PT), to evaluate for hypercoagulable states. **Antiphospholipid Antibodies:** Testing for antiphospholipid antibodies, as their presence may be associated with vascular disorders.

Autoimmune Markers: Screening for autoimmune markers, including antinuclear antibodies (ANA) and rheumatoid factor, to explore potential autoimmune contributions. **Complete Blood Count (CBC):** To assess for abnormalities such as anemia or other blood cell-related issues. **Erythrocyte Sedimentation Rate (ESR) and C-Reactive Protein (CRP):** These markers of inflammation may be elevated in vasculitic conditions. **D-dimer:** Elevated levels may suggest increased fibrinolysis and potential blood clot formation. And vascular ultrasound of the legs may be suggested to look for problems with blood flow.

The differential diagnostic methods should be applied to rule out the co-existing conditions as it can be seen in paper of Asli Bilgic MD et al. The skin biopsy test can help to rule out vasculitis, a different condition that is caused by the destruction and inflammation of blood vessels, and it also should not be confused with the livedo reticularis, a red or blue-like discoloration of the skin that does not cause the clinical symptoms of soreness and pain [(2) (10).] In this case, as the patient is diabetic, all the necessary investigations were performed to rule out the other conditions that are responsible for swelling and pain, along with blisters in the lower limbs. All results were normal. So the skin biopsy was done a month ago, and confirmation of LV was done. Early and correct diagnosis as well as appropriate therapy are essential for the prevention of acute ischemia and long-term consequences like chronic pain syndrome and dysaesthesia[(4).]

The management of LV is challenging as there are no guidelines for its treatment. Several therapeutic approaches have been employed, with varying degrees of success. All the treatments that are proposed were based on the reports of isolated cases and case series[(9).] Alexandre Sacchetti Bezerra et al reported a case of LV in pregnant women which has given an insight for understanding the different mode of treatment in the pregnant women.[(5)]
The treatment of LV consists of pain management, wound care, medications that treat blood clot-related problems that cause ulcers, and medications that suppress the immune system. Often, the treatment of LV involves collaboration between different medical specialties, such as hematologists, general medicine, wound care specialists, etc.[(10)] Here in this care, the reference was taken from medicine as there was no control of diabetes even with medications; an ENT reference was taken as there was a pain in the left side submandibular and cervical regions; and a general surgery reference was taken for an abscess just below the left knee, which was then planed for incision and drainage. The therapeutic modalities or conventional therapy for LV include anticoagulants, anti-platelets, fibrinolytic agents, vasodilators, anti-inflammatory agents, immunosuppressive agents, and some supportive measures. In some cases, it is necessary to provide combination therapy. Supportive measures like leg elevation, compression therapy, bed rest, and topical wound care aid in the quick healing of wounds[(8) (9)]. Based on the etiology of the disease, in most of the reported cases, anticoagulants like heparin, especially low-molecular weight heparin, warfarin, and rivaroxaban are used as monotherapy[(6).] In this case, at the beginning, he was treated with an injection of enoxaparin; after stabilization, it was replaced with rivaroxaban. Along with the anticoagulants, the patient was treated with analgesics for pain and some topical agents. Supportive measures like wound care and leg elevation were also advised.

CONCLUSION:

As LV may be associated with a variety of underlying conditions, no particular etiology of the disease has been identified. Several laboratory differential investigations are to be performed to rule out other conditions responsible for the disease. Based on reported cases, the different therapeutic approaches have been used for treatment of LV. However, randomized controlled trials with a high level of evidence were essential to framing the therapeutic guidelines for the management of LV. Along with this, patient education about the disease and drugs used in treatment is very essential for long-term management and to prevent the recurrence of disease. Especially when patients are treated with the anticoagulants for a longer period of time, advice should be given on the side effects, like bleeding. Due its complex Pathophysiology, under diagnosis: due its rarity and complexity of its diagnosis it may be under diagnosed and limited awareness among healthcare professional may contribute to it's under recognition. The limited understanding of its epidemiology emphasizes the need for increased awareness, research, and collaboration among healthcare professionals to improve the recognition and management of this challenging condition.

Exactly no one knows the causes or the preventive measures of LV; however different treatment approach has been established based on reported cases. Patients with LV may need to take blood thinners for life time to prevent the occurance of new ulcers.

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