Case Report

BIOMEDICAL Journal of Scientific & Technical Research

ISSN: 2574 -1241

DOI: 10.26717/BJSTR.2026.64.010049

Four Infusions of Lidocaine and Ketamine as Therapy for Refractory Erythromelalgia

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ARTICLE INFO

Received: January 13, 2025

Published: January 20, 2026

Citation: Siddharta Guatama Lacerda, Luiz Eduardo Imbelloni, Severina Vitória Macedo Ramos, Eliel Pereira da Silva, Maiza Macedo Ramos, Antonio Fernando Carneiro and Felipe Bufaiçal Rassi Carneiro. Four Infusions of Lidocaine and Ketamine as Therapy for Refractory Erythromelalgia . Biomed J Sci & Tech Res 64(3)-2026. BJSTR. MS.ID.010049.

ABSTRACT

Background

Erythromelalgia is a rare pain syndrome characterized by burning pain and erythema in the extremities, primarily the hands and feet, frequently triggered by heat, emotional stress, or physical activity. Conventional pharmacological treatments, such as antiplatelet agents, anticonvulsants, antidepressants, and vasodilators, are often ineffective, highlighting the need for alternative therapeutic strategies.

Case Report

Patient female, 23-year-old, with diagnosed erythromelalgia, had previously used pregabalin, acetylsalicylic acid, and duloxetine, with limited response and refractory symptoms. In 2025, treatment with chemical sympathectomy was initiated using intravenous infusion of 75 mg lidocaine without vasoconstrictor and 100 mg ketamine, diluted in 250 mL of 0.9% saline at 250 mL/h, with two sessions spaced 15 days apart. And later at six months and 1 year after new infusions.

Conclusion

The combined infusion significantly reduced the frequency and intensity of pain crises, while improving the patient's functional capacity and quality of life. Intravenous infusion of lidocaine and ketamine proved to be safe and effective for the management of refractory erythromelalgia, representing a promising alternative for patients unresponsive to conventional treatments.

Keywords: Erythromelalgia; Local Anesthetic; Lidocaine; Ketamine; Neuropathic Pain; Chemical Sympathectomy; Chronic Pain

Introduction

Erythromelalgia is a condition characterized by episodic pain, erythema and temperature of the extremities, which is relieved by cooling and aggravated by warming, as described by Silas Weir Mitchell in 1978. Erythromelalgia can be classified into two distinct forms. Primary erythromelalgia may be idiopathic or inherited and has been linked to over 20 autosomal dominant mutations in the SCN9A, SCN10A, and SCN11A genes [1]. There is no official data published by DATASUS/SUS or the Ministry of Health specifically on the incidence or number of cases of erythromelalgia publicly available to date [2]. There are several types of treatment for erythromelalgia, which can be topical, oral, parenteral, or invasive approaches [3]. Oral medications may include aspirin, drugs that inhibit serotonin reuptake, tricyclic antidepressants, anticonvulsants, calcium antagonists, or medication combinations [3]. Parenteral approaches may include nitroprusside infusions, lidocaine infusions, and prostaglandin infusions [3]. Invasive approaches include sympathetic blocks and epidurals, sympathectomies, dorsal column stimulators, and neurosurgery [3].

Lidocaine, a local anesthetic with membrane-stabilizing properties, and ketamine, a potent analgesic antagonist of NMDA receptors, provide relief from chronic pain syndromes, especially in conditions refractory to conventional treatments [4,5]. Both drugs act on the modulation of neuronal excitability and central sensitization, central mechanisms in the pathophysiology of neuropathic pain. This case report presents a case of erythromelalgia treated with intravenous infusion of lidocaine without vasoconstrictor and ketamine, in two stages with a 15-day interval, with the aim of evaluating the effectiveness in controlling flare-ups, as well as improving the patient's quality of life and functionality. Subsequently, two further infusions were given 6 months and 1 year after the first two infusions, as a booster.

Case Report

This case report was registered in the Plataforma Brasil (CAAE: 93436125.7.0000.5182) and approved by the CEP/CONEP (number 8,059,909) of the Hospital Universitário Alcides Carneiro da UFCG, PB, and the Free and Informed Consent Form was signed by the patient after the explanation of the entire anesthetic procedure to be performed and authorized for publication in an indexed medical journal. A 23-year-old female patient, weighing 50 kg and 161 cm tall, with a confirmed diagnosis of erythromelalgia in May 2024 through a clinical examination by your rheumatologist, is using pregabalin 75 mg, acetylsalicylic acid 100 mg, and duloxetine 30 mg, with a limited response to the medications and refractory symptoms, presenting with recurrent and debilitating painful episodes (Figure 1). Several therapeutic adjustments were made with these medications. In 2025, after discussions with several clinics, it was decided to start treatment with chemical sympathectomy. The patient was referred to the surgical center, monitored with cardioscopy (ECG), pulse oximetry, non-invasive blood pressure control every 10 minutes. After intravenous access with a 20G catheter, the patient was positioned in the supine position, and intravenous infusion of 75 mg of lidocaine 2% without vasoconstrictor and 100 mg of ketamine, diluted in 250 ml of 0.9% saline solution, was started at a rate of 250 ml/hour via continuous infusion pump.

Figure 1: Photograph of the feet before using the lidocaine and ketamine solution.

The procedure was repeated twice, with 15-day intervals between each session. Following this approach, there was a significant improvement in the patient's quality of life and functionality, with a reduction in the frequency and intensity of seizures, as well as greater comfort during daily activities, demonstrating progressive progress in her clinical condition. She reported significant symptomatic relief, with > 95% improvement reported on pain and symptom assessment at the 2-month follow-up (Figure 2). Due to the improvement in symptoms, six months and one year after the two initial infusions, a new therapy with lidocaine and ketamine was performed, at the doses used above.

Figure 2: Photograph of the feet after using the lidocaine and ketamine solution.

Discussion

Diagnosis of erythromelalgia is essentially clinical, being characterized by the triad of paroxysmal hyperthermia of the extremities with erythema, pain and intense burning and increase in skin. There is no cure for erythromelalgia; thus, its treatment is focused on relieving the patient's manifestations, which may be done with topical, oral, and behavioral therapy. Erythromelalgia usually follows a chronic course, sometimes progressive and incapacitating [3]. Erythromelalgia causes impaired quality of life, in addition to higher mortality. In the present patient, symptomatic improvement was observed after two injections with lidocaine and ketamine, 15 days apart. Further intravascular injections were repeated 6 months and 1 year after treatment, in a patient refractory to other treatments. Several case reports on the treatment of erythromelalgia were used: stellate ganglion block [6], dorsal root ganglion stimulation [7], endoscopic lumbar sympathectomy [8], intravenous immunoglobulin therapy [9], gel of 2% amitriptyline and 0.5% ketamine [10], and continuous lumbar epidural infusion of 0.0625% ropivacaine with 2 μg/ml fentanyl at 12 ml/hour [11].

One study estimated that lidocaine only relieves pain symptom in 55 % with hereditary erythromelalgia patients [12]. There is evidence that intravenous lidocaine can act in stabilizing the neuronal membrane and modulating pain [4]. While ketamine, an NMDA receptor antagonist, has demonstrated efficacy in reducing central sensitization and modulating refractory pain [5]. Although the combination of lidocaine with ketamine has not been discussed in studies as a specific therapeutic approach for erythromelalgia, the use of this combination in our clinical case demonstrated effectiveness in controlling symptoms. Infusion of lidocaine without vasoconstrictor and ketamine was associated with a significant reduction in the frequency and intensity of attacks, such that the combination of these two agents showed an important synergistic effect in the patient, in the context of refractory erythromelalgia. With a good clinical examination, the history of the illness, and the classic findings, the diagnosis of erythromelalgia is easily made [3]. However, erythromelalgia can be confused with some types of complex regional pain syndrome. Although erythromelalgia usually occurs spontaneously, it can appear after an injury.

However, erythromelalgia is usually bilateral and spreads bilaterally, and the pain is reduced or absent between attacks. In this case, the diagnosis was made clinically Ketamine, an N-methyl-D-aspartic acid receptor antagonist that was first discovered in 1962, has become established in anesthesia providing dose-dependent anesthetic, sedative, and analgesic effects, with diverse properties and therapeutic, and numerous side effects [13]. When administered intravenously in the perioperative setting, lidocaine has been shown to reduce opioid requirements, postoperative pain, paralytic ileus, and hospital length of stay, potentially causing various side effects [14]. No side effects were observed in the four administrations of both drugs.

Conclusion

Erythromelalgia is a rare neurovascular disorder that has the potential to be severely disabling and painful, with various forms of treatment. Clinical treatment with oral and topical medications, as well as non-pharmacological interventions, are frequently used, but with variable success, becoming refractory in the short term and requiring invasive treatment. The multiple-infusion therapeutic approach proved effective in achieving a substantial improvement in the patient's quality of life, who experienced greater comfort while performing daily activities. This favorable response suggests that the administration protocol used, in a carefully adjusted regimen, presents significant therapeutic potential for the management of patients with refractory erythromelalgia, and may represent a promising therapeutic alternative for patients with erythromelalgia who do not respond to conventional treatments.

Financial Support

No.

Conflict of Interest

No.

Contribution

No.

IRB

No. This paper has not been presented.

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ISSN: 2574-1241

DOI: 10.26717/BJSTR.2026.64.010049

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Submission Link: https://biomedres.us/submit-manuscript.php