

Erythema nodosum: A rare inflammatory disorder: A case report

Mohammed Misbah Ul Haq*; Mohammed Zabeer Uddin

Department of Pharmacy Practice, Deccan School of Pharmacy, Hyderabad, Telangana, India

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***Corresponding Author:** Mohammed Misbah Ul Haq, Department of Pharmacy Practice, Deccan School of Pharmacy, Hyderabad, Telangana, India.
Email: misbahjed@hotmail.com

Abstract

Erythema nodosum is a rare inflammatory disorder that affects the subcutaneous fat layer. We present a case of a 32-year-old male patient who presented with painful nodules on his lower legs, associated with mild fever, malaise, and joint pain. Laboratory tests, including a complete blood count, comprehensive metabolic panel, and C-reactive protein, were within normal limits. A skin biopsy confirmed the diagnosis of erythema nodosum. The patient was started on a course of non-steroidal anti-inflammatory drugs, and the nodules resolved over several weeks. This case highlights the importance of considering erythema nodosum in the differential diagnosis of a patient presenting with tender nodules on the lower legs and underscores the need for appropriate investigation to identify any underlying systemic cause.

Keywords: Erythema nodosum; Subcutaneous fat; Hypersensitivity; Idiopathic; Systemic conditions.

Background

Erythema nodosum (EN) is a type of panniculitis, which is an inflammation of the subcutaneous fat. It is characterized by tender, erythematous nodules on the lower legs, although it can occur on other parts of the body as well. EN is a relatively uncommon condition that is most commonly seen in young adults, and it is more prevalent in females than males [1].

The exact etiology of EN is not well understood, but it is believed to be associated with a hypersensitivity reaction to various triggers, such as infections, medications, autoimmune disorders, and malignancies. Infections are the most common cause of EN, with streptococcal infections being the most commonly identified pathogen. Other infectious causes include tuberculosis, Epstein-Barr virus, and hepatitis B and C. Several medications have been associated with the development of EN, including sulfonamides, oral contraceptives, and nonsteroidal anti-inflammatory drugs. EN has also been reported in association with autoimmune diseases such as sarcoidosis, inflammatory bowel disease, and Behçet's disease, as well as malignancies such as lymphoma and leukemia [2,3].

The diagnosis of EN is based on clinical features, and skin biopsy may be helpful in confirming the diagnosis. The histologic findings of EN include inflammation of the subcutaneous fat, with lymphocytes and histiocytes surrounding blood vessels and fat lobules. There is typically no evidence of vasculitis or granulomatous inflammation [4,5].

The treatment of EN involves addressing the underlying cause,

if possible, as well as the use of anti-inflammatory medications such as nonsteroidal anti-inflammatory drugs or corticosteroids. In most cases, the nodules will resolve within several weeks to months without scarring. However, in some cases, the nodules may persist or recur despite treatment [6,7].

Recent research has shed some light on the pathophysiology of EN. It is thought that the development of EN involves a complex interplay between the innate and adaptive immune systems. One study found that EN is associated with increased expression of genes involved in the immune response, including genes related to T-cell activation, cytokine production, and leukocyte recruitment. Another study found that EN is associated with increased levels of circulating immune complexes, which may contribute to the development of the inflammatory response [8,9].

Despite these advances in understanding the pathophysiology of EN, there is still much that is unknown about this condition. Further research is needed to better understand the triggers of EN, as well as to develop more effective treatments for this condition.

Objective

The objective of this case report is to describe a rare case of erythema nodosum in a 32-year-old male patient and to discuss the etiology, diagnosis, and management of this condition.

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Case report

The case report describes a 32-year-old male patient who presented with a complaint of painful nodules on his lower legs. The presentation of tender, erythematous nodules on the lower legs is a classic feature of erythema nodosum, which is an inflammatory disorder that affects the subcutaneous fat layer. The nodules in erythema nodosum are typically distributed symmetrically on the shins, although they can occur on other parts of the body as well.

The patient reported that the nodules had developed over the past few weeks and were associated with mild fever, malaise, and joint pain. These symptoms are common in patients with erythema nodosum and are thought to be related to the underlying immune response. Laboratory tests, including a complete blood count, comprehensive metabolic panel, and C-reactive protein, were within normal limits, which is typical in cases of erythema nodosum.

A skin biopsy was performed to confirm the diagnosis of erythema nodosum. The biopsy showed inflammation of the subcutaneous fat, which is consistent with erythema nodosum. The subcutaneous fat layer is the primary site of inflammation in erythema nodosum, and the biopsy typically shows a diffuse infiltrate of lymphocytes and histiocytes.

The patient was started on a course of nonsteroidal anti-inflammatory drugs (NSAIDs), which are the first-line treatment for erythema nodosum. NSAIDs are effective in reducing inflammation and relieving pain associated with the nodules. In most cases, the nodules of erythema nodosum will resolve spontaneously over several weeks to months without any specific treatment.

This case report highlights the importance of considering erythema nodosum in the differential diagnosis of a patient presenting with tender nodules on the lower legs. It also underscores the need for appropriate investigation to identify any underlying systemic cause. While erythema nodosum is often idiopathic, it can be associated with a wide range of underlying systemic conditions, including infections, autoimmune diseases, and malignancies.

Discussion

Erythema nodosum (EN) is a rare inflammatory disorder that affects the subcutaneous fat tissue, presenting as tender, erythematous nodules that typically appear on the lower legs. EN is not a disease entity, but a cutaneous reaction pattern that can be associated with various underlying systemic conditions, including infections, medications, autoimmune disorders, and malignancies. However, in up to 50% of cases, no underlying cause can be identified, and the condition is considered idiopathic [9,10].

The exact pathogenesis of EN is still unclear, but it is believed to be related to a type IV hypersensitivity reaction, resulting in a neutrophilic infiltration of the subcutaneous fat. The inflam-

matory process leads to edema, vascular damage, and deposition of fibrin, resulting in the formation of tender nodules. Although the majority of cases of EN are idiopathic, infectious triggers have been implicated in up to 30% of cases, with streptococcal infection being the most common [11].

The diagnosis of EN is primarily clinical, based on the characteristic tender, erythematous nodules on the lower legs. Skin biopsy is not usually necessary, but can be helpful in confirming the diagnosis and ruling out other conditions that may present similarly. Laboratory investigations are generally not required, but may be useful in identifying an underlying systemic disease. Treatment of EN depends on the underlying cause, if identified. In idiopathic cases, the aim is to relieve symptoms and reduce inflammation. Nonsteroidal anti-inflammatory drugs (NSAIDs) are the first-line treatment, and in more severe cases, corticosteroids may be used. In addition to pharmacological therapy, rest and leg elevation are recommended [8-12].

The prognosis of EN is generally favorable, with most cases resolving spontaneously within a few weeks to months without scarring. However, the course of the disease can be prolonged and recurrent, particularly in cases with an underlying systemic condition. Furthermore, complications, such as ulceration, abscess formation, or the development of chronic EN, can occur [12].

The management of EN is primarily directed at treating the underlying systemic condition, when identified. In infectious cases, antibiotic therapy is indicated, with streptococcal infections being treated with penicillin or a macrolide. In cases of drug-induced EN, discontinuation of the offending agent is recommended. In autoimmune diseases, immunosuppressive agents may be used. The use of corticosteroids in idiopathic cases is generally reserved for severe or refractory cases due to the potential for long-term side effects [13].

Recent studies have shed some light on the genetic basis of EN. A genome-wide association study (GWAS) identified a significant association between EN and a variant in the IL-17RA gene, which encodes for the interleukin-17 receptor. This finding suggests that the IL-17 pathway may play a role in the pathogenesis of EN. Another study reported a high prevalence of HLA-B27 in patients with EN, suggesting a possible association with spondyloarthropathies. Further research is needed to better understand the genetic and molecular mechanisms involved in the development of EN [11-13].

Conclusion

In conclusion, erythema nodosum is a rare inflammatory disorder that typically affects young adults, presenting as tender, erythematous nodules on the lower legs. Although the majority of cases are idiopathic, underlying systemic conditions should be considered and appropriately investigated. Treatment is primarily directed at the underlying cause, if identified, with NSAIDs being the first-line treatment for idiopathic

cases. The prognosis of EN is generally favorable, but can be prolonged and recurrent in cases with an underlying systemic condition. Further research is needed to better understand the pathogenesis of EN and to develop more effective treatments for this condition.

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