

# Erythema nodosum: A Harbinger of Grave News

Zaina Shahid, MD<sup>1</sup>; Irene Chu, DO<sup>1</sup>; Dominic Parfianowicz, DO<sup>1</sup>; Yasin Kanakrieh, DO<sup>1</sup>; Brian J Costello, DO<sup>1</sup>

<sup>1</sup> Department of Internal Medicine, Lehigh Valley Health Network, Allentown, Pennsylvania

## Introduction:

- Erythema nodosum (EN) is a type of panniculitis affecting subcutaneous fat of the skin.
- In clinical practice, it is mostly believed to be self-limiting isolated skin disease or a reaction to infections, drugs, inflammatory bowel disease, pregnancy state or autoimmune disorders.
- Extensive workup for underlying etiology is generally not obtained.
- Rarely, it can be the first sign of an underlying malignant process.

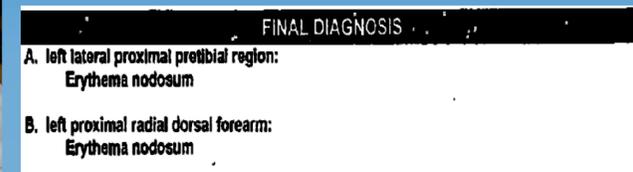
## Case presentation:

- A 23-year-old female presented to hospital with 4-week history of **recurrent painful skin nodules on the ventral aspect of her shins and forearms associated with subjective fever, chills, sore throat, cough, arthralgia, intense fatigue and decreased appetite** since her trip to Florida 5 weeks ago.
- She was seen in Dermatology office a week ago and a punch biopsy was obtained with pending results. Physical exam revealed no fever, multiple warm, tender, indurated, erythematous skin nodules predominantly on lower extremities and a solitary healing oral ulcer.
- Labs showed pancytopenia; WBC (3.3), RBC (1.86), Hemoglobin (6.8) and platelets (59), and elevated inflammatory markers; CRP (171), ESR (21).

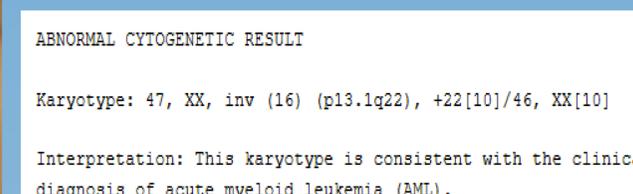


**Image 1:** Tender, symmetric, erythematous nodules on patient's shins.

- CT imaging revealed left axillary, bilateral hilar and solitary aortocaval lymphadenopathy.
- Subsequent workup including Urine Pregnancy Test, EBV, CMV, HIV, HSV, hepatitis, parvovirus, SARS CoV2, Lyme, Streptococcus and QUANTIFERON testing was negative.
- On day 4 of admission, blast cells were noticed on her peripheral smear.
- A bone marrow biopsy was obtained which confirmed the diagnosis of **Acute Myeloid Leukemia (AML)**.
- She was started on induction chemotherapy. Her skin lesions resolved as her cell counts recovered with chemotherapy.
- Results of her outpatient skin biopsy were obtained showing septal panniculitis with lymphocyte, histiocytes and rare eosinophil infiltration consistent with the diagnosis of **Erythema Nodosum**.



**Image 2:** Skin Biopsy confirming Erythema Nodosum.



**Image 3:** Bone Marrow Biopsy confirming Acute Myeloid Leukemia

## Discussion:

- Less than 1 % cases of EN are attributed to malignancies.
- Hodgkin lymphoma is the most common malignancy associated with EN while AML is extremely rare with approximately 10 reported cases in the last 50 years in English Literature. Only a few of these cases have been proven by biopsy.
- Definitive diagnosis requires a biopsy to rule out Leukemia Cutis or Sweet syndrome, which are more commonly associated with AML.
- EN is believed to result from either a hypersensitivity reaction to malignant cells or inflammation triggered by cytokines released by leukemic cells. EN can coincide or appear shortly before the diagnosis of AML and resolves with chemotherapy. *Recurrence of EN often signifies relapse of AML.*
- This case illustrates that EN can be a rare paraneoplastic cutaneous manifestation of AML. It is crucial for physicians to obtain comprehensive history and perform a systematic investigation to rule out all possible etiologies of EN including malignancy.

## References:

- 1) Schwartz RA, Nervi SJ. Erythema nodosum: a sign of systemic disease. Am Fam Physician. 2007 Mar 1;75(5):695-700. PMID: 17375516.
- 2) Xu X, Liang G, Duan M, Zhang L. Acute myeloid leukemia presenting as erythema nodosum: A case report. Medicine (Baltimore). 2017;96(47):e8666. doi:10.1097/MD.00000000000008666
- 3) [https://www.researchgate.net/publication/321233382\\_Acute\\_myeloid\\_leukemia\\_presenting\\_as\\_erythema\\_nodosum\\_A\\_case\\_report](https://www.researchgate.net/publication/321233382_Acute_myeloid_leukemia_presenting_as_erythema_nodosum_A_case_report)