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CLINICAL CASE

Teenager with persistent facial edema and induration

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Abstract

Introduction: *Acute lymphoblastic leukemia (ALL) is the most common oncological disease in the pediatric population; however, skin infiltration occurs only in 1-3% of the patients and almost always manifests after the diagnosis is made.* **Clinical case:** *A male teenage patient who presented with facial edema and infiltration, associated with systemic symptoms such as asthenia and adynamia. On physical examination, the patient presented facial edema and indurated plaques, as well as cervical, inguinal, and axillary adenopathy. Complete blood count showed pancytopenia and a chest X-ray revealed a mediastinal mass. Due to a high suspicion of malignancy a bone marrow and skin biopsy was taken, both with pre-B ALL. Chemotherapy was started and the patient is now in maintenance phase.* **Conclusions:** *Leukemia cutis manifestations are heterogenous, from a small papule to a big nodule. It is more common in patients with acute myeloid leukemia and it is rare in patients with pre-B ALL, specially in the pediatric population. The diagnosis should be done with a biopsy and the treatment is with systemic chemotherapy. The diagnosis should always be considered in patients with unexplained edematous or indurated lesions, especially in the context of systemic symptoms.*

Keywords: *Leukemia cutis. Pre B acute lymphoblastic leukemia. Pediatric cutaneous leukemia.*

Adolescente con edema e induración facial persistente

Resumen

Introducción: *La leucemia linfoblástica aguda es la enfermedad oncológica más común en la edad pediátrica; sin embargo, la infiltración a la piel solo ocurre en el 1-3% de los pacientes y se manifiesta habitualmente posterior al diagnóstico de leucemia.* **Caso clínico:** *Adolescente varón que acude a urgencias de nuestra unidad por presentar edema facial persistente, junto con astenia y adinamia. En la exploración física presenta edema facial con placas difusas induradas y adenopatía cervical, inguinal y axilar. Se decide realizar una biometría hemática, que muestra pancitopenia, y una radiografía de tórax, que revela una masa mediastinal. Por sospecha de malignidad se decide realizar una biopsia de médula ósea y de piel, dando como resultado leucemia linfoblástica pre-B en ambas. Se inició quimioterapia y actualmente se encuentra en fase de mantenimiento.* **Conclusiones:** *Las manifestaciones clínicas de leucemia cutis son heterogéneas, desde una pápula pequeña hasta lesiones nodulares de diferentes tamaños. Lo más común es verlas en pacientes con leucemia mieloide aguda, y es muy raro en pacientes con leucemia linfoblástica aguda pre-B, especialmente en la edad pediátrica. El diagnóstico se realiza con una biopsia de piel y el tratamiento es con quimioterapia sistémica. Es importante tener en mente este diagnóstico en pacientes con síntomas sistémicos de leucemia.*

Palabras clave: *Leucemia cutis. Leucemia linfoblástica aguda pre-B. Leucemia cutánea pediátrica.*

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Introduction

Leukemia is a neoplasm of the hematopoietic system very common in the pediatric population[1]. It can also have manifestations in other organs, including the skin. The skin manifestations, called leukemia cutis (LC), are very heterogeneous and non-specific, it can also be present previous to the systemic manifestations even though it is rare. The most common type of leukemia associated with LC is acute myeloid leukemia (AML) and the least common pre B acute lymphoblastic leukemia (ALL). We report the case of a teenager who presented with facial edema and infiltration and systemic symptoms as the initial manifestation of pre-B ALL.

Clinical case

A previously healthy 14-year old male developed facial edema that worsened in the mornings and improved spontaneously during the evenings, associated with asthenia and adynamia. He consulted several physicians without obtaining any specific diagnosis or treatment; during this time, a complete blood count (CBC) was done and found to be normal. Due to persistent edema he was brought to our clinic 2 months later. Physical exam was notable for facial edema, diffuse indurated plaques affecting the cheeks, palpebral erythematoedematous plaques (Fig. 1), bilateral cervical, inguinal and axillary adenopathy, and splenomegaly. A new CBC was taken showing pancytopenia, and a chest X-ray revealed a mediastinal mass. Bone marrow (BM) biopsy was taken as part of the diagnostic protocol revealing small to medium cells with scarce cytoplasm, and immunohistochemistry (IHC) positive for TdT and PAX5. A skin biopsy of the cheek showed a dense dermal inflammatory infiltrate composed of atypical lymphocytes (Fig. 2A), IHC was positive for TdT and PAX5 and negative for CD56 (Fig. 2B). With these pathology results, pre-B ALL with skin infiltration (LC) was confirmed.

The clinical differential diagnoses of facial edema and palpebral erythema include cellulitis, nephrotic syndrome, superior vena cava syndrome and parasitosis (such as onchocerciasis). The patient also presented facial induration and systemic symptoms which extends the differential diagnoses to include lymphoproliferative diseases infiltrating the skin. Pancytopenia and a mediastinal mass leads to a high suspicion of LC, confirmed by histopathology.

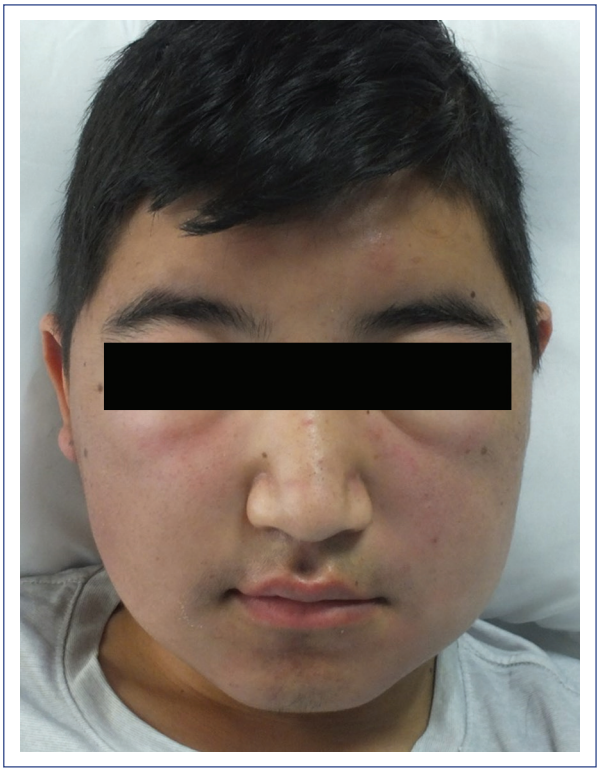

Figure 1. Facial edema, diffuse indurated plaques on the cheeks.

Discussion

ALL is one of the most frequent oncological diseases in children[1], affecting the BM first and subsequently appearing in peripheral blood and other organs, including the skin[2].

LC refers to cutaneous infiltration of neoplastic leukocytes (myeloid or lymphoid) and LC occurs more frequently in patients with myeloid leukemias, especially in subtypes with monocytic components (AML)[1]. Skin involvement is more common in children, occurring in up to 50% of patients with AML, 4-20% with chronic lymphocytic leukemia (CLL), and around 1-3% in ALL. It is particularly uncommon in pre B-cell ALL[3,4].

Usually LC occurs after the diagnosis of leukemia (55-70%) and up to 30% patients have concomitant systemic and cutaneous involvement[2,4]. LC may also be the presenting sign of tumor relapse or recurrence and generally is a poor prognostic sign, however the exact survival rate of patients with LC secondary to pre-B ALL in unknown[3,5]. Aleukemic LC refers to cutaneous involvement without other manifestations, affecting up to 7% of patients, and may precede

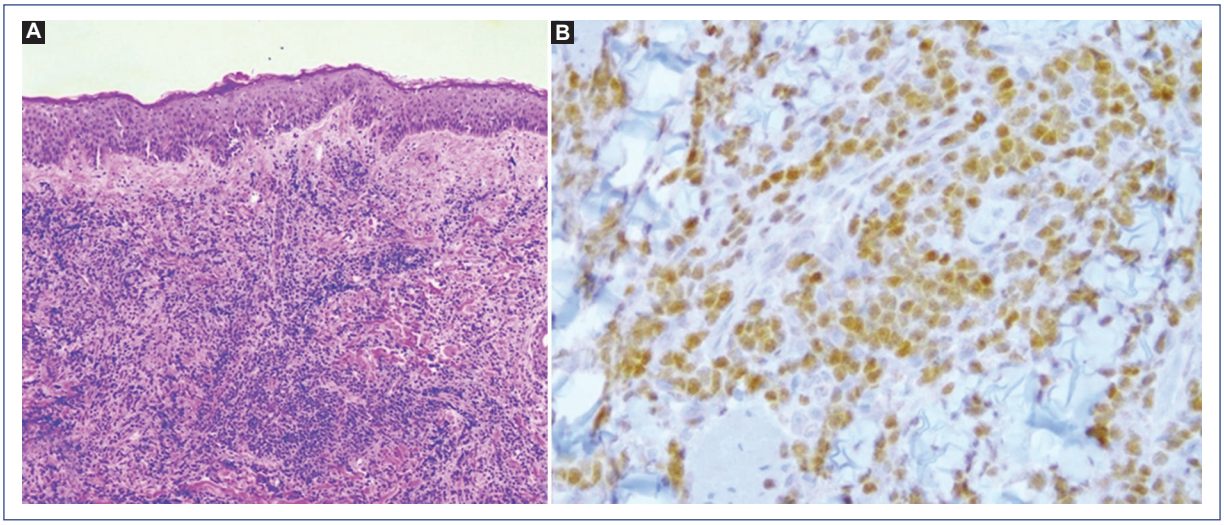

Figure 2: A: the dermis has a dense infiltrate of small blastic monomorphic cells (×10). **B:** inmunohistoquímica de Pax – 5 positiva para células blásticas linfoides de linaje B (×40).

peripheral blood or BM disease for several months or years[2].

The clinical presentation of LC is heterogeneous varying from hemorrhagic papules or violaceous nodules to plaques of different sizes; erythematous papules and nodules are the most frequently seen[4]. Different skin lesions can be seen in the same patient during the course of the disease. The most commonly involved sites are the extremities (particularly lower), followed by arms, back, chest, scalp, and face[4]. In pre-B cell ALL, the most common findings are infiltrated nodules and plaques on the head and neck[5].

The diagnosis of LC is based on histopathologic findings characterized by: a Grenz zone (superficial dermis without any inflammatory cells), a lymphocytic infiltrate that can be perivascular and periadnexial or dense diffuse or nodular involving the dermis and subcutis, with numerous mytoses and necrotic cells[3,4]. IHC is important to determine the cell lineage. In ALL the B lymphoblasts are positive for CD79a, CD19, PAX - 5 and TdT, the combination of the last two being the most useful[2,4]. T lymphoblasts to CD1a, CD3, CD43 and TdT. CLL lymphocytes express CD5, CD19, CD20, CD43[2,4]. In AML the most frequently used markers and are positive are: NASD, MPO, CD43, lysozyme and CD74[3,4]. Additional to the skin biopsy, a BM biopsy as well as peripheral blood analysis is necessary to confirm the diagnosis[3,4].

The treatment is aimed to eradicate systemic disease; systemic chemotherapy and local therapy, such as local radiation or surgery, is indicated[4]. At the same time as remission of hematological findings, there is partial or complete resolution of cutaneous manifestations[2].

Conclusion

LC may present heterogeneously and is a poor prognostic factor in patients with leukemia[3]. The diagnosis should always be considered in patients with unexplained edematous or indurated lesions, innocent as these may look. The presence of LC in patients with pre-B cell ALL is extremely rare and only a few are reported in the literature.

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Conflicts of interest

The authors declare no conflicts of interest.

Ethical disclosures

Protección de personas y animales. Los autores declaran que para esta investigación no se han realizado experimentos en seres humanos ni en animales.

Confidencialidad de los datos. Los autores declaran que en este artículo no aparecen datos de pacientes. Además, los autores han reconocido y seguido las

recomendaciones según las guías SAGER dependiendo del tipo y naturaleza del estudio.

Derecho a la privacidad y consentimiento informado. Los autores declaran que en este artículo no aparecen datos de pacientes.

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References

1. Godínez-Chaparro JA, Valencia-Herrera AM, Duarte-Abdala MR, Mena-Cedillos CA, Toledo-Bahena ME. Leukemia cutis and other dermatological findings in pediatric patients with acute myeloid leukemia. Bol Med Hosp Infant Mex. 2021;78:411-7.
2. Wagner G, Fenchel K, Back W, Schulz A, Sachse MM. Leukemia cutis-epidemiology, clinical presentation, and differential diagnoses. J Dtsch Dermatol Ges. 2012;10:27-36.
3. Martínez-Leboráns L, Victoria-Martínez AM, Torregrosa-Calatayud JL, Alegre de Miquel V. Leukemia cutis: a report of 17 cases and a review of the literature. Actas Dermosifiliogr. 2016;107:e65-9.
4. Cho-Vega JH, Medeiros LJ, Prieto VG, Vega F. Leukemia cutis. Am J Clin Pathol. 2008;129:130-42.
5. Novoa RA, Wanat KA, Rosenbach M, Frey N, Frank DM, Elenitsas R. Erythrodermic leukemia cutis in a patient with pre-B-cell acute lymphoblastic leukemia. Am J Dermatopathol. 2015;37:650-2.