Pediatric Patch-Type Granuloma Annulare: Clinical Mimic of Morphea?

Etta Hanlon MS[1], Diego Flores BS[2], Robert Theil MD[3] , Douglas J. Grider MD[3,4]

[1]Virginia Tech Carilion School of Medicine (VTCSOM) [2] Edward Via College of Osteopathic Medicine [3]Division of Dermatology, Department of Internal Medicine, Carilion Clinic, [4]Dominion Pathology Associates, [5]Department of Basic Science Education, Virginia Tech Carilion School of Medicine

Background

- Granuloma annulare (GA) is a benign, self-limited granulomatous dermatosis with multiple variants, often diagnosed clinically and through histologic evaluation[1]
- Patch-type GA is a rare GA variant often presenting as pink to red-brown plaques over large areas of skin, such as the trunk[2].
- Patch-type GA is frequently misdiagnosed due to its clinical and histopathological resemblance to other inflammatory dermatoses, such as morphea and lichen sclerosus[7]

Case Presentation

- Described is a 10-year-old male with a three-month history of a spreading, mildly pruritic rash on the left abdomen, waistline, and back, clinically suggestive of morphea (Figures 1a and 1b).
- Histopathology showed deposition of hyaluronic acid (dermal mucin) between collagen bundles, confirmed on colloidal iron with and without digestion, associated with intermixed CD68-positive histiocytes, supporting a diagnosis of interstitial granuloma annulare[8]. (Figures 2 and 3).
- The upper dermis did not have fibrosis or eosinophilic smudged collagen, excluding lichen sclerosus and the reticular dermis exhibited normal or thinned collagen bundles, excluding morphea. (Figures 4, 5, 6, and 7).

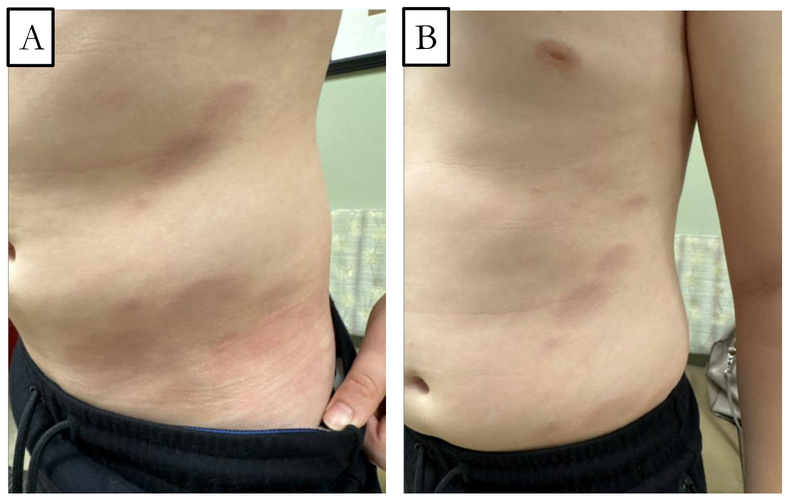

Fig. 1a, 1b
Clinical photograph of is the rash, exhibiting a slightly raised border and appeared hypopigmented upon skin stretching, present on the left abdomen, waistline, and back, clinically suggestive of morphea.

The authors have no significant relationships with, or financial interests in, any commercial companies pertaining to this poster.

Histologic Findings

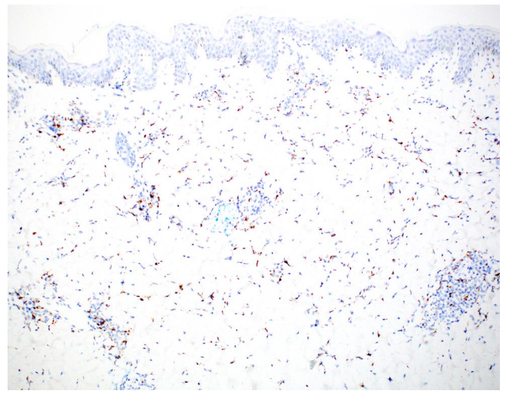

Fig. 2 Photomicrograph of CD68 at 10X shows CD68-positive histiocytes splaying collagen bundles, supporting a diagnosis of interstitial granuloma annulare.

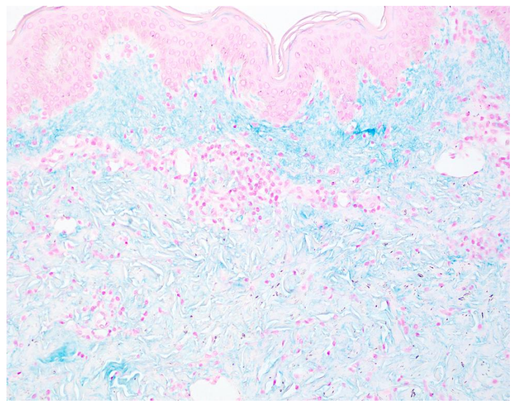

Fig. 3 Colloidal iron stain without digestion shows the blue dermal mucin between collagen bundles

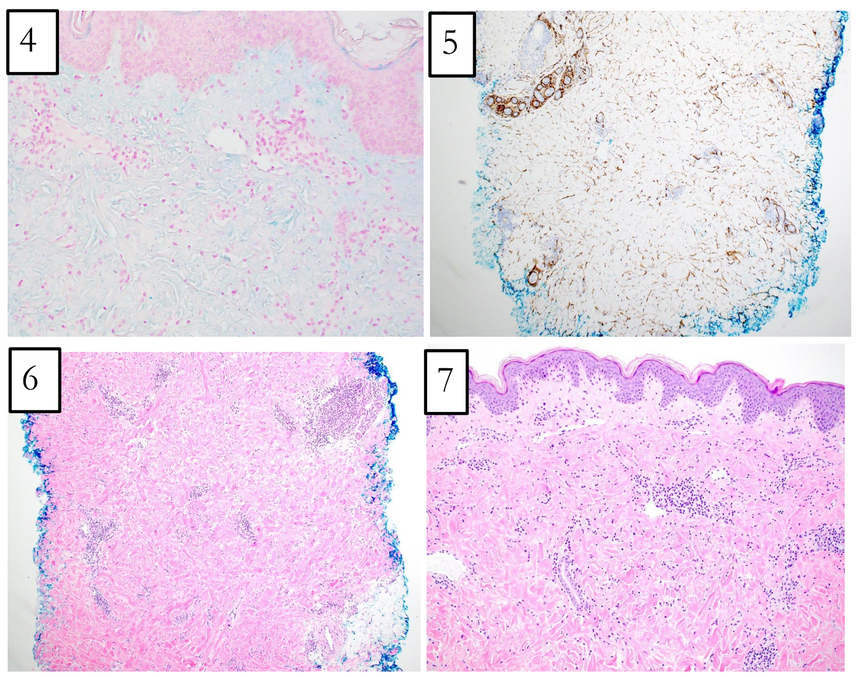

Fig. 4 Colloidal iron stain with digestion
Fig. 5 CD34 stain at 4X
Fig. 6 H&E 4X
Fig. 7 H&E 10X

Clinical Course

- A 10-year-old male presented to the dermatology clinic for evaluation of a three-month history of an expanding rash on his left abdomen and waistline. (Figures 1A and 1B).
- The rash exhibited a slightly raised border and appeared hypopigmented upon skin stretching.
- The lesion was initially asymptomatic, with occasional mild pruritus but no associated pain or burning. The family had not attempted any prior treatments. The rash had progressively spread to the back and waistline.
- The initial clinical impression was morphea, with differential diagnoses including lichen sclerosus and granuloma annulare. A 4-mm punch biopsy was performed on the left abdomen under local anesthesia.
- Following the histopathologic confirmation of patch-type GA, the patient was referred to pediatric rheumatology for further evaluation due to concerns of an underlying autoimmune process.
- Conservative treatment was utilized and is typically appropriate due to the self-limiting nature of GA, with prescription of topical corticosteroids for symptomatic relief.

Discussion

- Granuloma annulare (GA) is a chronic, granulomatous skin disorder with several clinical subtypes, including localized, generalized, subcutaneous, perforating, and patch-type variants [5]
- Although most often seen in adult females, patch-type GA occurs in both pediatric and adult populations[3,4].
- Despite an unclear etiology, proposed mechanisms involve a Th1-mediated delayed hypersensitivity reaction to various triggers, such as infections, trauma, and immune dysregulation[5,6]
- The importance of an appropriate histopathological evaluation, including ancillary stains, to accurately differentiate patch-type GA from morphea or other inflammatory dermatosis is highlighted.

References

1. Schmieder SJ, Harper CD, Schmieder GJ. Granuloma Annulare. PubMed. Published 2020. https://www.ncbi.nlm.nih.gov/books/NBK459377
2. Aichelburg MC, Pinkowicz A, Schuster C, Volc-Platzer B, Tanew A. Patch granuloma annulare: clinicopathological characteristics and response to phototherapy. *Br J Dermatol*. 2019;181(1):198-199. doi:10.1111/bjd.17606
3. Mutasim DF, Bridges AG. Patch granuloma annulare: clinicopathologic study of 6 patients. *J Am Acad Dermatol*. 2000;42(3):417-421. doi:10.1016/s0190-9622(00)90212-3
4. Khanna U, North JP. Patch-type granuloma annulare: An institution-based study of 23 cases. J Cutan Pathol. 2020 Sep;47(9):785-793. doi: 10.1111/cup.13707. Epub 2020 Apr 27. PMID: 32279342.
5. Albert M, Maruani A, Leducq S. Clinical Manifestations and Management of Pediatric Granuloma Annulare: A Systematic Review. *J Pediatr*. 2023;257:113392
6. Buechner SA, Winkelmann RK, Banks PM. Identification of T-cell subpopulations in granuloma annulare. *Arch Dermatol*. 1983;119(2):125-128.
7. Reeves C, Falcone LM, Beatty CJ, et al. Patch-Type Granuloma Annulare with Clinical and Histological Features of Morphea: A True Overlap? *Skin J Cutaneous Med.* 2023
8. Perez-Chua TA, Kisel YG, Chang KH, Bhawan J. Morphea and Its Variants and the "Floating Sign"—An Additional Finding in Morphea. *Am J Dermatopathol*. 2014;36:500-505
9. Cyr PR. Diagnosis and management of granuloma annulare. *Am Fam Physician*. 2006;74(10):1729-1734.
10. García-Malinis AJ , Gracia-Cazaña T , Planas Linares D , Agón-Banzo PJ , Gilaberte Y . Granuloma annulare: report of 13 patients treated with photodynamic therapy . J Eur Acad Dermatol Venereol 2021 ; 35 : e211 – e4 .
11. Fayyazi A, Schweyer S, Eichmeyer B, et al. Expression of IFNgamma, coexpression of TNFalpha and matrix metalloproteinases and apoptosis of T lymphocytes and macrophages in granuloma annulare. *Arch Dermatol Res*. 2000;292(8):384-390. doi:10.1007/s004030000150