

Paediatric Dermatology Column: Case Report

Subcutaneous granuloma annulare: a paediatric case

皮下環狀肉芽腫之兒科案例

SM Wong 黃思敏 and KK Jong 莊國坤

Subcutaneous granuloma annulare (GA) is a rare but self-limiting inflammatory disorder of skin that occurs over the scalp, shins or dorsal surface of the hands and feet. The lesions typically present in children aged 3-6 years. A biopsy of the skin lesion is often required for definitive diagnosis. Most lesions show spontaneous resolution but the recurrence rate is high. Due to the rarity of the disease, no single treatment has been proved to be efficacious in promoting resolution or preventing recurrence. Nevertheless, the outcome is good. We described a case of 4-year-old girl presenting with asymptomatic lesions over the dorsal foot with skin biopsy-proven subcutaneous GA and a good response to topical corticosteroid.

皮下環狀肉芽腫是一種罕見的自限性炎症皮膚病，常發於頭皮、小腿或手腳背部。三至六歲的小孩為典型的發病年齡群組。診斷通常都要經由皮損的活組織檢查來確定。大多數的皮損都會自行消退，但復發率高。由於此病甚為罕見，現仍沒有任何一種治療被證實能有效加快皮損消退或預防復發。然而，患者的病情多有良好的結果。我們描述了一個四歲女孩在足背呈現無症狀的病灶，經皮膚活檢確診是皮下環狀肉芽腫，在使用外用皮質類固醇後情況得到改善。

Keywords: Granuloma annulare, necrobiotic, palisading, subcutaneous

關鍵詞：環狀肉芽腫、漸進性壞死、柵欄、皮下

Social Hygiene Service, Department of Health, Hong Kong

SM Wong, FHKCP, FHKAM

Histopathology and Cytology Laboratory, Public Health Laboratory Centre, Department of Health, Hong Kong

KK Jong, FHKPath, FHKAM

Correspondence to: Dr. SM Wong

Yaumatei Dermatological Clinic, 12/F, 143 Battery Street, Yaumatei, Kowloon, Hong Kong

Case report

A 4-year-old girl presented with asymptomatic brownish skin lesions over the left foot dorsum for one year. The child enjoyed a good past health and had vaccination up-to-date. She denied a history of trauma or insect bites.

Clinical examination showed that there were multiple discrete erythematous to brownish papules over the dorsal surface of the left foot,

the largest lesion measuring 0.5 cm in diameter. The lesions were firm in consistency and non-tender on palpation (Figures 1 & 2). There was no epidermal change. She was otherwise well all along and had no other skin or systemic involvement. She had no personal or family history of diabetes mellitus or autoimmune disease.

Histopathology of the skin lesions showed that there were aggregates of histiocytic infiltration in the deep dermis and subcutaneous tissue with pale centres showing necrobiotic collagen (Figure 3), fibrin and faint bluish material. The surrounding histiocytes were in a palisade arrangement. Colloidal iron stain and Alcian blue stain showed mucin in the necrobiotic centre (Figure 4). The epidermis was otherwise unremarkable.



Figure 1. Multiple erythematous papules were found over the dorsal surface of the left foot.



Figure 2. An elliptical incisional skin biopsy was performed on the lesion of the left foot.

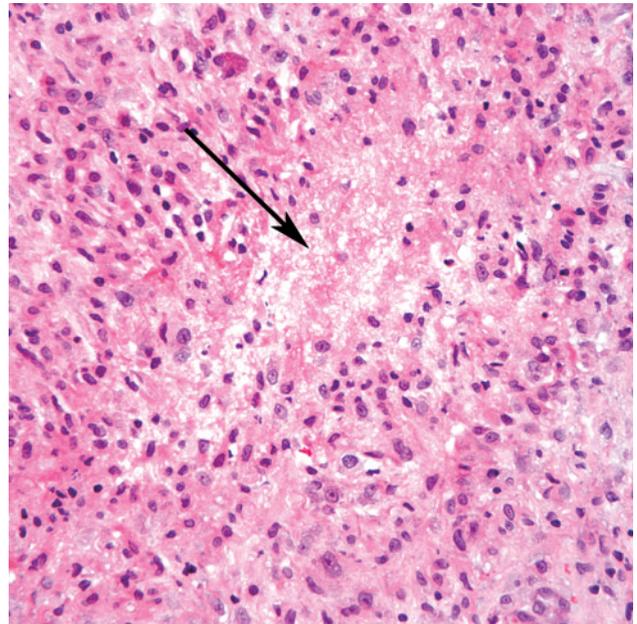


Figure 3. Necrobiotic granuloma: Centre of necrobiosis (arrow) rimmed by palisaded histiocytes (Haematoxylin & eosin, original magnification x 40)

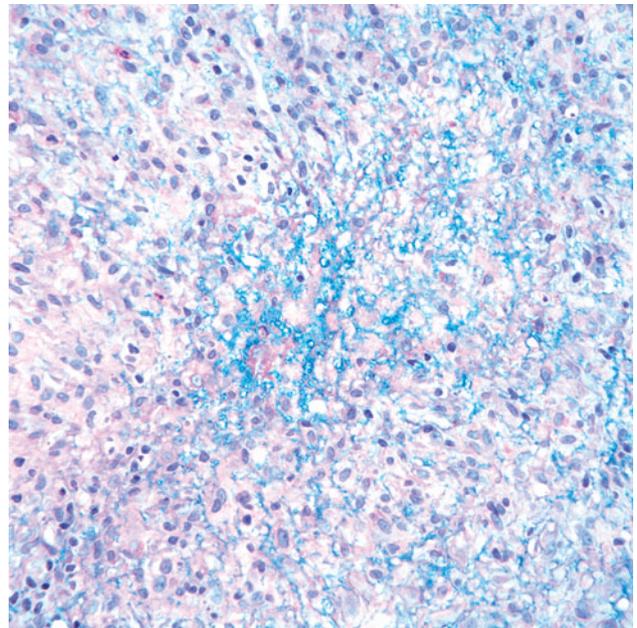


Figure 4. Necrobiotic centre is rich in mucin (blue) (Colloidal iron stain, original magnification x 40).

The patient was diagnosed to have subcutaneous granuloma annulare. She was given 0.1% topical mometasone furoate cream to apply daily. At six-month follow-up, the lesions resolved with post-inflammatory hyperpigmentation and she remained well at 12-month follow-up.

Discussion

Subcutaneous granuloma annulare, also known as pseudo-rheumatoid nodule, palisading subcutaneous granuloma, isolated subcutaneous granuloma and necrobiotic granuloma, is an inflammatory skin disease with palisading granulomatous histological changes. It was first described by Colcott Fox in 1895. Owing to its histological characteristics, it shares similarities with nodular lesions of rheumatoid arthritis. Subcutaneous granuloma annulare (SGA) is a self-limiting inflammatory disorder usually affecting toddlers, typically with onset after birth, and children of age three to six years.¹ The sex ratio is of 1:1 and its aetiology is unknown. It has been attributed to trauma, insect bites, bacterial (*Streptococcus*) and viral (varicella-zoster virus) infection, tuberculosis, connective tissue diseases, insulin-dependent diabetes mellitus and sarcoidosis. In our patient, there was no preceding febrile illness, trauma or insect bites. As the patient was asymptomatic and had no relevant family history, routine blood tests or screening for autoimmune diseases and diabetes mellitus was not performed.

Clinically, the asymptomatic lesions are small, pinkish, hard-to-elastic, nodular, isolated or associated with other local annular lesions. The overlying skin is otherwise normal except for the discolouration.

Sites of predilection include extremities such as the dorsal surfaces of the hands and feet, pretibial region, elbows, forearms, forehead and scalp. Lesions situated on the head have been described

to adhere to the periosteum and fixed to underlying layers whereas those on the extremities adhere to the fascia and are mobile.

Histopathological characteristics are small roundish aggregates of fibrinoid degeneration of collagen in the deep dermis and subcutaneous tissue associated with mucin deposits and surrounded by histiocytes in palisading arrangement with infiltration of lymphocytes and occasionally eosinophils.

With a history of rapid growth and multiple recurrences, SGA can mimic malignancy and inadequate biopsy sample taken from the peripheral area of inflammatory cells can lead to misdiagnosis.¹ The diagnosis of SGA can be difficult and is based on histopathological findings. Investigations including complete blood picture; erythrocyte sedimentation rate; autoimmune markers such as antinuclear antibody, rheumatoid factor; and plain radiographs may be helpful to exclude other conditions but are not warranted in all cases. No specific test is available for this disorder. Imaging such as magnetic resonance imaging may help to delineate the depth of the lesions but the findings are not pathognomonic.²

Recurrence of lesions is frequent, ranging from 19% to 75%.³ Recurrence predominantly occurs locally although distant involvement has been reported.^{3,4} Local recurrence occurs from one month to seven years. Nevertheless, the lesions resolve spontaneously.

The outcome is usually good even without treatment. No systemic illness or rheumatoid disease was noted during follow-up except that two cases were diagnosed to have insulin dependent mellitus which occurred before the onset of SGA in one of these two cases.^{3,5} Treatment varies from topical corticosteroids or chemotherapeutic drugs, intralesional injection of triamcinolone acetonide, to simple surgical

excision or wide excision.³ None of these treatments proved to be efficacious in preventing recurrence or promoting resolution of the lesions. It is prudent to emphasise the natural course of spontaneous resolution to the affected children and their family.

Conclusion

Subcutaneous granuloma annulare of the extremities is a self-limiting inflammatory disorder of the skin that occurs over anterior pretibial area or the dorsal surface of the hands and feet. This subgroup typically presents in children. Biopsy of the skin lesion, especially for rapid growing one, is required for definitive diagnosis. Spontaneous resolution and high recurrence rate must be emphasised to the

patients and their families during counselling in order to decrease the stress that the family may encounter.

References

1. Burrington JD. "Pseudorheumatoid" nodules in children: report of 10 cases. *Pediatrics* 1970;45:473-8.
2. De Maeseneer M, Vande Walle H, Lenchik L, Machiels F, Desprechins B. Subcutaneous granuloma annulare: MR imaging findings. *Skeletal Radiol* 1998;27: 215-7.
3. Davids JR, Kolman BH, Billman GF, Krous HF. Subcutaneous granuloma annulare; recognition and treatment. *J Paediatr Orthop* 1993;13:582-6.
4. Felner EI, Steinberg JB, Weinberg AG. Subcutaneous granuloma annulare: a review of 47 cases. *Pediatrics* 1997;100:965-7.
5. Grogg KL, Nascimento AG. Subcutaneous granuloma annulare in childhood: clinicopathologic features in 34 cases. *Pediatrics* 2001;107:E42.