

## Multiple granuloma annulare in African infants

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### Abstract

**Background:** Granuloma Annulare (GA) is a benign, self-limiting, inflammatory and granulomatous disease of unknown etiology occurring in both adults and children. There are four main variants of granuloma annulare: Localized, subcutaneous, generalized, and perforating GA. Localized granuloma annulare is the most common form in children, while generalized GA is mostly affecting adults and is rare in children.

To our knowledge, there are no reports of multiple generalized granuloma annulare in dark skinned infants.

**Main observations:** We report here three African children aged 2 days to 4 months, presenting with multiple GA. All the patients were in good general health conditions. Diagnosis was clinical.

**Conclusions:** Clinical features of multiple GA in dark skinned infants are shown. This variant of GA is rarely observed in children. Our patients were otherwise healthy; a causative agent could not be found.

### Keywords

child; developing countries; granuloma annulare; ring/annular pattern.

### Introduction

Granuloma Annulare (GA) is a benign, self-limiting, granulomatous inflammatory dermatosis of unknown etiology occurring in both adults and children. Clinically, the condition is characterized by asymptomatic papules, frequently arranged in an annular or circinate pattern on the distal extremities, measuring 1-5 cm in diameter. Lesions are typically asymptomatic, and in light skinned individuals they range in color from skin-colored to erythematous and violaceous[1].

The condition was first described by Fox in 1895; the term "granuloma annulare" was coined by Radcliffe Crocker in 1902 [2]. The diagnosis depends on clinical and histological features [3]. The exact pathogenesis is still unknown and globally accepted therapies are lacking.

Several clinical variants of GA have been reported, namely localized, generalized or disseminated, targetoid, giant, subcutaneous and perforating [4]. Localized granuloma annulare is the most common form in children [3]. Generalized Granuloma Annulare (GGA) represents between 2.8% and 15% of all cases and is rarely reported in children[5]. To our knowledge, there are no reports of multiple granuloma annulare in dark skinned infants and toddlers.

We report three South Sudanese infants, presenting with multiple GA on the body. The three children came to our hospital in one year time.

## Case Reports

**Case 1:** A healthy 4 months old male child presented with asymptomatic, multiple annular lesions of variable size (up to many centimeters) with raised margins; some of them were confluent, giving a circinate appearance. The lesions were spread on trunk, upper and lower limbs. (Figure 1,2) Erythema was not visible, most likely because of the intense skin pigmentation. Some slight pigment alterations were present.



**Figure 1:** Case 1. Multiple annular lesions on abdomen **Figure 2:** Case 1. Multiple annular lesions on trunk and thighs

There was no history of fever or drug intake. On examination, the child was afebrile without pallor, icterus or lymphadenopathy. Height, weight, and vital signs were normal. The mother was HIV negative. A clinical diagnosis of multiple generalized subcutaneous GA was made.

**Case 2:** A healthy newborn male child aged less than 1 month presented with multiple annular lesions on face, trunk and upper limbs. Some lesion were hypopigmented (Figure 3). The child's general conditions were unremarkable, there was no history of fever. The mother was negative at HIV test performed during pregnancy. A clinical diagnosis of generalized GA was made.

**Case 3:** A healthy newborn male, aged only two days, presented with multiple annular lesions on face, scalp and upper trunk, with raised margins. According to the mother, the lesions were present at birth. Erythema was more visible compared to the other two patients, because of the lighter skin color due to the age. The lesions were clinically very similar to the ones of tinea corporis. (Figure 4) However, he was too young to have tinea. The mother was HIV negative and the child was in good general health, reactive, sucking. Height, weight, head circumference and vital signs were normal. Clinical diagnosis was multiple GA.



**Figure 3:** Case 2. Multiple hypopigmented annular lesions on face



**Figure 4:** Case 3. Multiple erythematous annular lesions on face and head

## Discussion

GA occurs in all age groups, but is rare in infancy [1,6,7]. Most cases are sporadic and occur in otherwise healthy children. The etiology and pathogenesis of GA are poorly understood. Occasional familial cases are described. An association with several medical conditions, such as diabetes, malignancies, thyroid disease, borrelia infection, have been described [3,5]. In particular, GA as a complication of BCG vaccination was reported in few cases from Korea. It is suggested that GA might occur in relation to the physical trauma of vaccination or a cell-mediated delayed hypersensitivity reaction against a certain antigen of the vaccine [8,9,10,11]. There was no history of BCG vaccine administration in our cases.

There are four main variants of GA: localized GA (LGA), subcutaneous GA (SGA), generalized GA (GGA) and perforating GA (PGA), plus 2 uncommon subtypes: Papular umbilicated GA and linear or segmental GA. Children most commonly present with the localized and subcutaneous form [3]. Periocular localization of LGA in pediatric patients has been reported to affect mainly the Afro-American population [3,12]. The generalized variant is more common in adults, rare in children; it occurs in approximately 8-15% of all patients with GA. Reports of GGA in children are scanty [1,6,7,13-15]. Generalized GA (GGA) includes generalized annular, disseminated papular, subcutaneous and atypical generalized GA. It occurs with multiple, disseminated lesions and is defined by the presence of more than 10 lesions distributed on trunk, extremities, and neck. Papules are described as erythematous, brown or skin coloured. Lesions may show 2 different clinical patterns: annular GA (67% of cases) and non-annular GA (33%). Annular GGA presents with lesions arranged in a ring-like configuration or rarely in plaques, while non annular GGA shows hundreds of individual papules symmetrically distributed on trunk and limbs. Localized GA usually resolves without scarring within 1 to 2 years [16]. Some authors described GGA in children as a kind of exanthematic eruption with very rapid onset and a spontaneous resolution in few months, while others described single cases with relapsing course [13,17].

Our patients presented with large, multiple annular lesions localized on head, trunk and limbs. The lesions were skin coloured or hyper/ hypopigmented. Erythema was visible only in the 2 days old child, probably because of the lower amount of skin pigmentation due to the age. The lesions of the first

child were generally infiltrated and at the rims more. This made us make the diagnosis of subcutaneous GA. The diagnosis is mainly clinical. The differential diagnoses of GA are extensive and include granuloma multiforme (Leiker), rheumatoid nodule, tinea corporis, pityriasis rosea, pityriasis rotunda, erythema annulare centrifugum, nummular eczema, discoid lupus erythematosus, psoriasis, necrobiosis lipoidica, morphea, hypertrophic lichen planus and erythema chronicum migrans [1]. In endemic countries, differential diagnosis with tuberculoid leprosy and granuloma multiforme needs to be kept in mind. In our patients leprosy was unlikely due to their age and the presence of sweat in the lesions; granuloma multiforme is mostly described in middle aged women and according to Leiker is not seen in persons younger than 10 years of age [18]. Biopsies could not be taken as it was at a rural hospital in war area with limited diagnostic means.

Most cases of GA are self limiting. A treatment can be proposed for symptomatic or chronic lesions, or if parents are anxious about the skin lesions. However, there is no standardized therapy available until now for GA. Treatment options include topical or intralesional corticosteroids, imiquimod cream, topical calcineurin inhibitors (tacrolimus, pimecrolimus), cryotherapy, and pulsed dye laser [3,13]. Surgical removal may be done for subcutaneous GA. Topical treatment is not recommended for generalized GA in children, because of the extent of the lesions and the tendency to spontaneous healing [3].

Because of the small age of our cases, no therapy was administered to our patients. The three children were not brought back to hospital for follow up, therefore they likely didn't have any complication or any worsening of the clinical picture.

## Conclusion

Multiple and generalized granuloma annulare is generally uncommon in infants. In our situation, probably due to environmental factors (such as vaccinations, infections, minor traumas or sun exposure) they seem to be more common. To our knowledge, no reports of GGA have been made in dark skinned children. Here it may present with hypopigmentation, hyperpigmentation, and/or slight erythema depending on the amount of skin pigmentation, which is less in newborns. Our patients were otherwise healthy; a causative agent could not be found.

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