Scaly erythematous eruptions of intertriginous locations

Tim Aung, Rowland Noakes

ABSTRACT

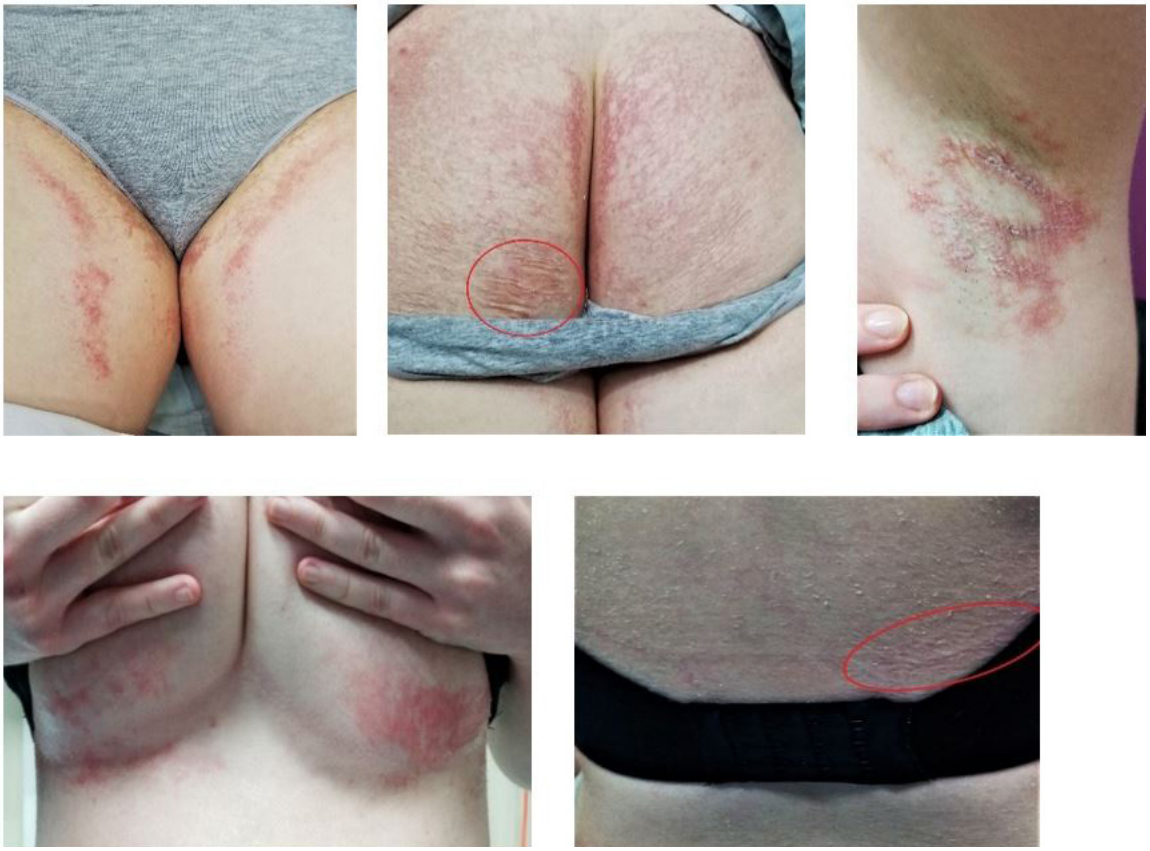
Intertriginous or flexural eruptions are common presenting problems in clinical practice, raising several differential diagnoses. A clinico-histopathological correlation is important to establish a correct diagnosis when a clinical diagnosis cannot be ascertained. We here present a case of flaky erythematous eruptions in a female adult, with a final diagnosis of granular parakeratosis, involving non-flexural area mid-back (under bra cover) in addition to flexural zones of the groin, gluteal fold, inframammary fold and axilla. It seems that mechanism of pressure and friction as well as occlusion all play a part. Management with potent topical steroid and avoidance of inciting triggers offered resolution in 4 weeks in this case.

Intertriginous eruptions are common presenting problems in clinical practice and include several diagnoses. A good history with a thorough evaluation of rash guides a proper management. A biopsy may be required in cases of clinical ambiguity. We here present a case of scaly erythematous eruptions in a female adult, leading a diagnosis of granular parakeratosis.

Case report

A female in her late twenties presented with a 6-week history of persistent erythematous

Figure 1: Erythematous eruption with desquamation, scales and wrinkles: Figure 1a: groins; Figure 1b: gluteal (red circle = wrinkled skin); Figure 1c: axilla; Figure 1d: inframammary; Figure 1e: mid-back of bra-covered area (red circle = wrinkled skin).



patches and plaques with desquamation, scales and wrinkled appearance, involving the intertriginous areas (Figure 1). She had no known allergies or significant medical history and was taking no medications. As a result of COVID-19 precautions she had recently begun using a laundry detergent containing benzalkonium chloride (BAC). She had been treated with mid-strength topical corticosteroid with a limited response. On examination, she was Fitzpatrick skin type 2, afebrile and systemically well, apart from symmetrical reddish-brown scaly papules, patches and plaques involving the groin, gluteal fold, axilla, inframammary fold, and mid-back (under bra) (Figure 1).

Discussion

The differential diagnoses of an intertriginous eruption are listed in Table 1, with related characteristic features.[1–3] In this case no fungal pathogens were found on microscopy; immunoglobulin E level was within normal range, and HIV and syphilis serology were negative. Histopathology from biopsy was reported as demonstrating hyperkeratosis, parakeratosis and hypergranulosis, typical of granular parakeratosis.

Granular parakeratosis, also known as hyperkeratotic flexural erythema, is an intermittently encountered reddish-brown intertriginous dermatosis with occasional involvement of non-intertriginous areas (e.g., mid-back under bra). It was first described in 1991 by Northcutt et al. in the axillary region.[4] Aetiopathogenesis of granular parakeratosis remains speculative with exposure to BAC (an antimicrobial preservative that is found in a number of household products including detergents, antiseptics and skincare products) or other irritants, in combination with occlusive, pressured and frictional locations of susceptible individuals.[1,3] There is no reported sex or age predilection; however, more adult female cases have been reported in the literature.[3,5,6] Although no standardised treatment for granular parakeratosis exists, management includes the avoidance of inciting triggers, general skincare and the use of topical and systemic agents such as corticosteroids, retinoids, vitamin D analogues, antibiotics and phototherapy or laser.[5,6] This case was treated with betamethasone dipropionate 0.05% ointment with emollients and avoidance of BAC, with resolution in 4 weeks. It has also been reported that spontaneous clearing of granular parakeratosis can also occur between months and year.[1,7]

Table 1: Differential diagnoses for erythematous eruptions of intertriginous zones.

Condition	Characteristics
Granular parakeratosis	Reddish-brown hyperkeratotic scaling rash involving the intertriginous zones with history of exposure to benzalkonium chloride in any age. Histologically: hyperkeratosis, parakeratosis and hypergranulosis.
Tinea (dermatophytosis)	Well-demarcated annular lesions with scales and central sparing, anywhere in body in any age. Confirmed by fungal microscopy, culture and sensitivity.
Atopic dermatitis/ eczema	A personal or family history of atopy. Papules, patches or plaques displaying spongiosis with lichenification in longer standing cases in any age. Pruritus is common.
Contact dermatitis (irritant or allergic)	Typically, localised dermatitis at contact sites; any age.
Inverse (flexural) psoriasis	Well-demarcated, shiny and smooth erythematous patches or plaques with fine scaling and fissuring involving the flexural sites. Seen in 20–30% of individuals with psoriasis.[8]
Erythrasma	Well-defined pink or brown patches with fine scaling involving axilla, groins and between toes, affecting mostly adults; coral-red fluorescence on Wood's lamp examination.
Candidiasis	Erythema, maceration, and satellite lesions in intertriginous sites of usually young children and the elderly.
Secondary syphilis	Non-itchy, reddish-brown papules on mostly the palms, soles and trunks of adults. Confirmed on serology.
Darier's disease, Dowling-Degos disease and Hailey–Hailey disease	Rare genetic (autosomal dominant) disorders that may appear in the flexural zones; usually present from young adult age onwards.

COMPETING INTERESTS
The authors have none.

AUTHOR INFORMATION
Dr Tim Aung: Primary care practitioner/GP, FRNZCGP, FRACGP, Dip in Gen Derm & Skin Cancer Surgery, Certificate in Dermatoscopy. Brisbane and Logan, Queensland, Australia.
Dr Rowland Noakes: Dermatologist, FACD, Queensland Institute of Dermatology, South Brisbane, Queensland, Australia.

CORRESPONDING AUTHOR
Dr Tim Aung: Primary Care Practitioner/GP. C/- Star Medical Centre-Woodridge, 29 Station Rd, Logan Central, QLD 4114, Australia. Ph: +61 (07) 3208 8981; Fax: +61 (07) 3290 2262; E: timaung@hotmail.com

REFERENCES
1. Lin Q, Zhang D, Ma W. Granular Parakeratosis: A Case Report. Clin Cosmet Investig Dermatol. 2022 Jul 15;15:1367-1370. doi: 10.2147/CCID.S371558.
2. Zhang L, Stewart T, Cook D, Frew J. Intertriginous skin disorders: what's lurking where? MedicineToday. 2022; 23(11): 45-50.
3. Tian CJ, Purvis D, Cheng HS. Granular parakeratosis secondary to benzalkonium chloride exposure from common household laundry rinse aids. N Z Med J. 2021 Apr 30;134(1534):128-142.
4. Northcutt AD, Nelson DM, Tschen JA. Axillary granular parakeratosis. J Am Acad Dermatol. 1991 Apr;24(4):541-4. doi: 10.1016/0190-9622(91)70078-g.
5. Lucero R, Horowitz D. Granular parakeratosis . 2022 Sep 22. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan–.
6. Lobo Y, Jibreal H. Flexural skin eruption in a boy aged four months. Aust J Gen Pract. 2022 Sep;51(9):684-686. doi: 10.31128/AJGP-12-21-6262.
7. Ip KH, Li A. Clinical features, histology, and treatment outcomes of granular parakeratosis: a systematic review. Int J Dermatol. 2022 Aug;61(8):973-978. doi: 10.1111/ijd.16107.
8. Merola JF, Li T, Li WQ, Cho E, Qureshi AA. Prevalence of psoriasis phenotypes among men and women in the USA. Clin Exp Dermatol. 2016 Jul;41(5):486-9. doi: 10.1111/ced.12805.