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Resident's Page

Looking at the "Inverse" in dermatology

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ABSTRACT

The predilection of skin disorders for characteristic sites and awareness of these sites is very important for clinical diagnosis. However, certain subtypes of common dermatological conditions can involve sites opposite to that of the classical presentation. These subtypes are named using the prefix "inverse" or the suffix "inversus/inversa" in the literature. These variants may pose a diagnostic challenge to residents and knowledge of the various "inverse" dermatological conditions and phenomena in the literature is of great significance.

Keywords: Inverse, Inversus, Inversa, Inversum

INTRODUCTION

There are certain subtypes of common dermatological conditions where the distribution is opposite to the classical distribution. These subtypes are named using the prefix "inverse" or the suffix "inversus/inversa" in the literature. The Latin words "inversus" (masculine) and "inversa" (feminine) meaning "upside down" are used for these dermatological conditions. An electronic and manual search of standard dermatology textbooks and databases including PubMed/Medline and Google Scholar was done to include all the "inverse" variants of skin diseases. These uncommon to rare inverse variants add to the diverse presentation in dermatological diseases.

INVERSE PSORIASIS

This subtype (also referred to as flexural or intertriginous psoriasis) commonly involves the groins, axillae, inframammary creases, perianal, and retroauricular regions. In rare cases, it can involve the antecubital and popliteal fossae and the interdigital spaces.[1,2] The plaques of Inverse Psoriasis are thin and well-defined, with reduced or absent scaling and a glazed surface as shown in Figures 1 and 2.[3] There can be a sudden appearance of Inverse Psoriasis in HIV-infected adults.[4]

INVERSE PITYRIASIS ROSEA/PITYRIASIS ROSEA INVERSUS

When the lesions of pityriasis rosea spare the trunk and affect the axillary and inguinal folds, face, neck, and extremities, the variant is called inverse pityriasis rosea [Figure 3].[5] It is prevalent in the pediatric age group and in dark-skinned individuals.[6]

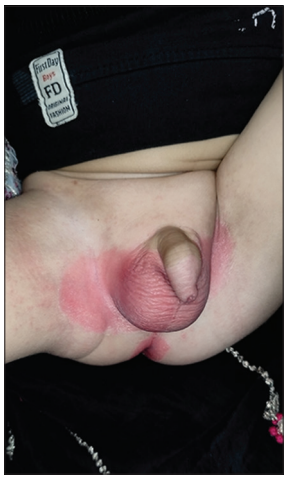

Figure 1: Napkin psoriasis in an infant.

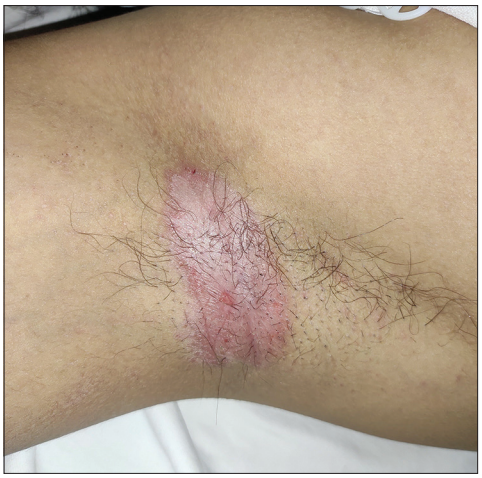

Figure 2: Inverse psoriasis in an adult involving axilla.

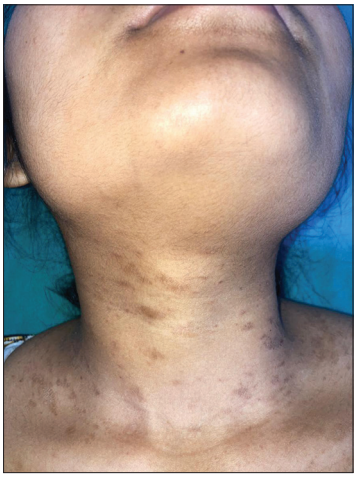

Figure 3: Inverse pityriasis rosea in a young female involving the neck.

INVERSE LICHEN PLANUS (LP)

This is an uncommon variant of LP in which the characteristic violaceous papules are seen in the axillary and inguinal folds and the inframammary areas. It can also involve other flexural areas such as the popliteal and antecubital fossae.[7] The lesions of inverse LP present as non-scaly erythematous lesions with ill-defined borders. In addition, erosions, hyperpigmentation, and hyperkeratotic papules can occur.[8]

LICHEN PLANUS PIGMENTOSUS (LPP) INVERSUS

Pock *et al.* described this rare subtype of LP in 2001.[9] LPP inversus is characterized by mildly itchy hyperchromic macules in the flexural areas, mainly the axillary folds (90%) and groins, and rarely, the antecubital and popliteal areas.[10] There is an absence of involvement in sun-exposed areas in contrast to classical LPP. The closest differential is ashy dermatosis which has a predilection for the trunk and limbs, and not the flexural areas.[11]

INVERSE GOTTRON PAPULES

Gottron's papules which are a characteristic sign of dermatomyositis are inflammatory, flat-topped, lichenoid papules on the extensor aspect of hands, particularly over the interphalangeal and metacarpophalangeal joints of the fingers.[12] When these papules are present on the palmar surfaces of the finger creases as hyperkeratotic papules, they are referred to as inverse Gottron's papules.[13] Inverse Gottron papules have been associated with severe Interstitial lung disease in adults and anti-MDA5 antibodies.[14]

ACNE INVERSA

The term "acne inversa" was proposed in 1989 by the Plewig and Steger for hidradenitis suppurativa (HS).[15] The term "acne inversa" indicates the involvement of pilosebaceous unit in the disease.[16] The histopathology and pathogenesis are similar to classical acne while the involvement of intertriginous sites is in contrast to acne. Some dermatologists are of the opinion that the term "acne inversa" should be preferred over "hidradenitis suppurativa."[17] In contrast, some are of the view that HS, though a misnomer, identifies a distinct entity that has discrete genetic basis, etiological factors, and disease associations, and therefore, the name should not be replaced.[18]

PTERYGIUM INVERSUM UNGUIS (PIU)

This is a rare condition which affects the distal part of the nail bed. The hyponychium is attached to undersurface of the nail plate. Therefore, with the growth of the nail plate, the hyponychium extends forward resulting in expungement of the distal groove.[19]

In classical pterygium unguis, the proximal nail fold fuses with the nail matrix and nail bed. PIU is otherwise called ventral pterygium. It can be congenital or acquired.[20] The acquired forms may be idiopathic or consequential to systemic conditions such as connective tissue diseases, leprosy, neurofibromatosis, or paresis.[21] Figure 4 shows pterygium inversum unguis in a patient with systemic sclerosis.

OPHIASIS INVERSUS

Muñoz and Camacho published the first description of this variant of alopecia areata in 1996. It is also known as sisaipho (ophiasis spelled backward).[22] It presents with non-scarring alopecia sparing the temporal and occipital areas [Figure 5]. Various studies have shown its increased association with atopy, vitiligo, thyroid disease, and trachyonychia.[23] The prognosis of this condition is better that of ophiasis.[23]

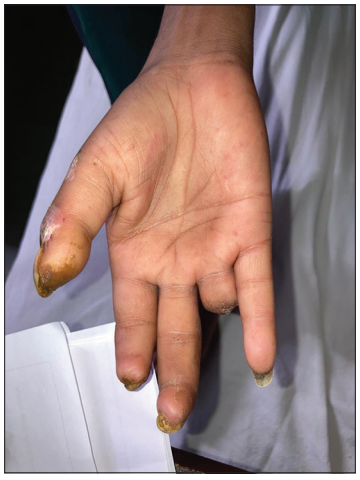

Figure 4: Pterygium inversum unguis in a patient of systemic sclerosis.

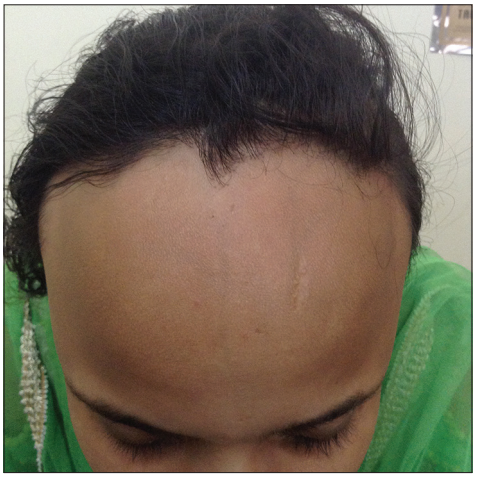

Figure 5: Ophiasis inversus.

INVERSE TYPE OF JUNCTIONAL EPIDERMOLYSIS BULLOSA (JEB INVERSA)

JEB inversa is a rare variant with symmetrical involvement of the body folds, that is, the axillary, inguinal, and perineal areas. The erosions heal with atrophic white scars. It has a non-lethal course with generalized blistering in the neonatal period and only flexural involvement in adult life. The proposed hypothesis is that some mutant proteins might be more unstable in the warmer regions of temperatures of the body folds.[24]

INVERSE TYPE OF RECESSIVE DYSTROPHIC EPIDERMOLYSIS BULLOSA (RDEB-I)

This is a rare variant of RDEB which presents in infancy with blistering, erosions, and atrophy over the axillae, thighs, groins, and neck. In adulthood, there is predominant involvement of the perineal area and the axillary folds.[25] Hands, feet, elbows, and knees are not involved.[26] This type of EB was first described in 1971 by Gedde Dahl.[27] It frequently involves the oral and esophageal mucosae, cornea, vulva, external ear canal, and nails. There is an increased risk of dental caries.[28] A study observed that Collagen7 from RDEB-I mutations demonstrated instability at high temperatures.[29] RDEB inversa carries a comparatively better prognosis.[27]

INVERSE KLIPPEL-TRENAUNAY SYNDROME

The classical features of Klippel-Trenaunay syndrome include capillary malformation of skin (port wine stain) with ipsilateral soft tissue and bone hypertrophy, and varicose veins. In the inverse presentation, the affected limb has deficient growth and is smaller in size. Although it has been postulated that the presence of a minus allele might be responsible for this deficient growth, the cause is still unknown.[30]

INVERSE PAPULAR ACROKERATOSIS (ACROKERATOELASTOIDES OF OSWALDO COSTA)

It is a rare genodermatosis presenting with skin-colored, horny papules on the lateral and dorsal aspects of palms and soles. It was described by Oswaldo Costa in 1952 and is seen mainly in young dark skinned women as asymptomatic keratotic papules on the lateral margins of hands and feet.[31]

There are a few more case reports of "inverse" conditions as summarized in Table 1.[32-39]

Table 2 enumerates Inverse phenomena and appearances in dermatology.[40-45]

Table 1: "Inverse" dermatological conditions mentioned in case reports.

Inverse sporotrichoid pattern of cutaneous tuberculosis[32,33]
Inverse subcorneal pustular dermatosis[34]
Inverse tinea versicolor (Tinea inversicolor)[35,36]
Inverse psoriasiform drug eruption[37]
Inverse lichenoid drug eruption[38,39]

Table 2: Inverse phenomena and appearance.

Inverse Koebner phenomenon/ Renbok phenomenon	First reported by Happle *et al*. in 1991 to describe normal hair growth seen in a psoriatic plaque in a patient with alopacia areata of the scalp.[40] The cellular alteration and change in the microenvironment by the first injury prevent the development of subsequent disease at the same site.[41]
Inverse halo phenomenon	Loss of pigmentation starts from the core of a melanocytic nevus rather than at the periphery.[42]
Inverse shouldering effect	The characteristic appearance seen in lipedema is present in females. Other names for this appearance are armchair appearance, bracelet sign, and cliff sign.[43] There is a symmetric increase in subcutaneous fat in bilateral lower limbs which stops abruptly at the level of malleoli and spares the feet.[44]
Inverse pigmentary network pattern	The reverse of the pigment network pattern on dermoscopy comprises white/lighter lines forming the grid of the network with comparatively darker areas filling the gaps. Other terms used for this pattern are negative pigment network and reversed pigment network. It is seen in melanoma, dermatofibroma, Spitz naevus, and evolving lesions of vitiligo.[45]

CONCLUSION

The involvement of sites opposite to the classical disease might pose a diagnostic challenge to a dermatology resident. Hence, knowledge of these unusual subtypes and their recognition is of utmost importance.

Ethical approval

The Institutional Review Board approval is not required.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The author(s) confirms that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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