Atrichia with papular lesions mimicking alopecia areata universalis

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To the Editor:

Atrichia with papular lesions (APL) is a heterogenous group of genodermatoses, characterized by complete and irreversible hair loss shortly after birth, associated with the development of keratin-filled cysts over the body [1]. A 20-year-old man presented with complete loss of hair on the scalp and all over the body since two months of age. He also exhibited skin-colored papules on the face and body beginning at three years of age. These papules initially appeared on the scalp and gradually progressed to involve the rest of the body within a span of two years. These lesions were unresponsive to treatment. There was no history suggestive of milestone delays, decreased sweating, diminution of vison, decreased hearing, seizures, atopy, or bone pains. Clinical examination revealed complete absence of hair on the scalp and entire body including axilla and groin (**Figure- 1A-C**). Multiple discrete skin-colored smooth and milia-like papules of size ranging from 0.5-1cm were distributed on his whole body. Dermatoscopy of scalp and forearm showed yellow dots, absence of hair follicle ostia, cyst-like lesions in a *cluster of star* appearance (**Figure 1D**). Mucosa, nails, teeth, palms, and soles were normal. There were no bony abnormalities, dysmorphic features, or any systemic involvement. Based on clinical history and examination, a differential diagnosis of APL versus alopecia areata universalis was made. Serum vitamin D, calcium, phosphate, and parathormone levels were within normal limits. Histopathological examination of a scalp biopsy (**Figure-1E-F**) revealed multiple cysts containing keratinous material, absence of normal hair follicles, and signs of inflammation. Following a comprehensive analysis of clinical history, examination, and investigative findings, the diagnosis of APL was confirmed.

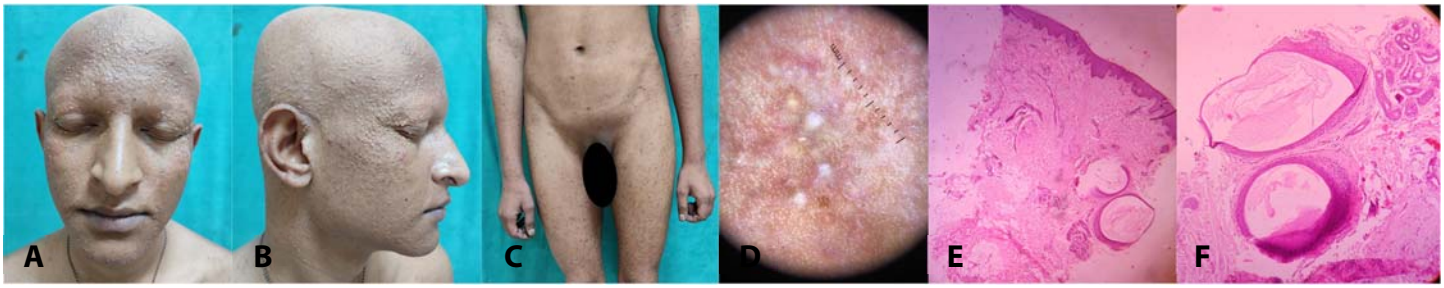

Figure 1. ***A)*** *Complete absence of hair of scalp, eyebrows, eyelashes, beard and moustache.* ***B)*** *Multiple tiny milia like discrete papules were distributed over scalp, lateral canthus along with complete loss of hair.* ***C)*** *Similar papules present over abdomen and thigh along with absence of pubic hair.* ***D)*** *Dermatoscopy revealed cluster of star appearance along with loss of follicular ostia.* ***E)*** *H&E histopathological examination of biopsy from scalp revealed complete absence of normal hair follicles and absence of signs of inflammation, 100×. Dermis showed dermal cysts containing keratinous material.* ***F)*** *Magnified view of dermis revealed dermal cysts lined by stratified squamous epithelium, which shows keratinous material inside. H&E, 400×.*

Box 1. *Revised diagnostic criteria for atrichia with papular lesions [2].*

Major criteria (4 out of 5 required for diagnosis)

1) Permanent and complete absence of scalp hairs by the first few months of life.
2) Few to widespread smooth, whitish, or milia-like papules on the face, scalp, arms, elbows, thighs or knees from infancy or childhood.
3) Replacement of mature hair follicle structures by follicular cysts filled with cornified material in scalp histology.
4) Mutation(s) in the human hairless gene through genetic testing
5) Clinical and/or molecular exclusion of vitamin-D-dependent rickets

Minor criteria (Supplementary criteria)

1) Family history of consanguinity
2) Absence of secondary axillary, pubic, or body hair growth and/or sparse eyebrows and eyelashes.
3) Normal growth and development, including normal bones, teeth, nails and sweating.
4) Whitish-hypopigmented streaks on the scalp.
5) Lack of response to any treatment modality

Atrichia with papular lesions is rare autosomal recessive follicular disorder caused by nonsense mutations of the hairless (HR) gene [2]. However, heterozygous individuals have normal hair and are clinically indistinguishable from genotypically normal persons. In APL, hair matrix cells and proximal inner and outer root sheath undergo a premature and massive apoptosis and disconnection from the overlying epithelial sheath which is essential for the movement of the dermal papilla [3]. As a consequence, the hair bulbs and dermal papillae remain stranded in the dermis and signals are not transferred between dermal papillae and stem cells in the bulge. This halts the further growth of hair follicles. Hence, hair shafts are not formed at the end of anagen phase [3].

Lanugo hairs are initially present at birth, but alopecia becomes complete within the first year of life as catagen follicles are unable to re-enter the anagen phase. Progressive keratin retention into follicles results in cystic formations clinically evident as papules [2]. The rarer conditions such as alopecia universalis congenita and hereditary vitamin D-resistant rickets can mimic APL, clinically and histologically. However, hereditary vitamin D-resistant rickets is usually asymptomatic at birth and during the first two years of life, displays delay of neuromotor development, bone abnormalities, and frequent infections [4]. Hair loss may precede the development of bony rachitic changes [5]. The index case met four of 5 major criteria as per Yip et al. [2], (**Box 1**). However, genetic testing for *HR* gene, vitamin D resistance could not be done due to inadequate facility. The development of alopecia universalis within the first year of life, disseminated cysts or papules, in absence of rachitic changes, and non-responsiveness to therapy all together strongly suggest the diagnosis of APL. Atrichia with papular lesions mimics the autoimmune form of alopecia universalis. Most cases are often incorrectly treated with corticosteroids or immunosuppressants. When dealing with cases of universal alopecia with papules which is resistant to therapy, it becomes imperative to consider APL. Therefore, careful clinical history, dermatoscopy, and histopathological examination will guide in diagnosing such rare case.

Potential conflicts of interest

The authors declare no conflicts of interest.

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