INTRODUCTION

Ankyloblepharon-ectodermal defect-cleft lip/cleft palate (AEC) syndrome is one of the variants of ectodermal dysplasia. It is an autosomal dominant disorder comprising of ankyloblepharon, ectodermal dysplasia, and cleft palate or cleft lip. In 1976, it was first described by Hay and Wells, therefore also known as Hay–Wells syndrome. The characteristic feature of this syndrome is “ankyloblepharon filiforme adnatum,” which refers to the partial thickness fusion of the eyelid margins. The “curly hair-ankyloblepharon-nail disease (CHAND) syndrome” is a clinical variant of AEC syndrome. We report a rare case of a 7-year-old girl who presented with history of abnormal dentition, 20 nail dystrophy, and light-colored, sparse curly hairs since birth. Parents gave history that at the time of birth, her both eyelids were fused partially, which was surgically corrected by an ophthalmologist at 1 month of age. There was no history of hypohidrosis or anhidrosis, heat intolerance, cleft lip or cleft palate. Microscopy of the hair shaft found “bubbly hair” morphology. This case is unique as it is a rare presentation, and awareness should be there for this constellation of findings so that the systemic associations can be investigated. “Bubble hair” morphology on microscopy is a unique feature in this rare autosomal recessive condition.

Key words: Ankyloblepharon-ectodermal defect-cleft lip/cleft palate syndrome, bubbly hair, curly hair-ankyloblepharon-nail disease syndrome, syndactyly, twenty nail dystrophy

CASE REPORT

We report a 7-year-old Indian girl, the second child of nonconsanguineous parents, who has all the features of a rare clinical variant of AEC syndrome, i.e., CHAND syndrome.
and light-colored, sparse curly hairs since birth. She was born at 37 weeks by normal delivery. Her birthweight was 2000 g and length was 46.5 cm. Parents gave history that at the time of birth, her both eyelids were fused partially, which was surgically corrected by an ophthalmologist at 1 month of age. Physical examination found she had hypopigmented, sparse, curled hair, absent eyebrows both sides in lateral two-third part and sparse in medial one-third part, sparse eyelashes, thin lips with short vermilion border of upper lip [Figure 1], dystrophic fingernails and toenails [Figure 2], abnormal dentition, and syndactylly bilateral fourth and fifth toes. She had normal ophthalmological, ear-nose-throat examination with normal abdominal ultrasound, echocardiogram, and G-banded karyotype. The microscopy of her hair shaft showed “bubbly hair” morphology [Figure 3].

There was no history of hypohidrosis or anhidrosis, heat intolerance, cleft lip or cleft palate. Patients had normal mental development with no physical development delay. There was no history of any other members affected in the family including patient’s parents suggestive of autosomal recessive inheritance.

**DISCUSSION**

The clinical features with which the patient presented are consistent with the diagnosis of AEC syndrome although she does not have any cleft lip or cleft palate, explaining the concept of variable expressivity in AEC syndrome. Till this date, approximately 23 patients have been found to have this rare clinical variant described in the literature.[3,4-14] The most constant and characteristic presentation in this syndrome is ankyloblepharon. Literature shows that there is overlap between different ectodermal syndromes such as Rapp–Hodgkin[11] and Bowen–Armstrong[14] and AEC syndromes, suggesting that a single entity can have variable expressions. CHAND syndrome is also a variant of AEC syndrome with a variable presentation. Literature also proves that the presence of cleft palate and cleft lip is not always obligatory. The characteristic feature between these two syndromes is the type of hair, which is brittle, wiry, and coarse in AEC syndrome and blonde, thin, and curly in CHAND syndrome. According to one literature by Seres-Santamaria et al.,[7] Hay–Wells syndrome can occur as a result of germinal mosaicism which can lead to recurrence of disease in the family. This study reported two siblings who had ectodermal dysplasia, ankyloblepharon, cleft palate/uvula, and additionally pits lower lip and alveolar synechiae, suggesting a recessive pattern of inheritance with a new clinical feature. Another similar study by Ohishi et al.[9] in 1991 reported woolly hair and atrophic nails and ankyloblepharon with new feature in the form of alveolar synechia and pits in lips in the second child born of consanguineous marriage, which again suggested its autosomal recessive mode of inheritance. The microscopic feature of bubbly hair morphology has not been mentioned in literature and seems to be a unique feature in our patient. Bubble hair is generally seen in acquired conditions in the form of air bubbles in the hair shaft after thermal injury to...
hair shaft.\textsuperscript{[14]} The presence of air cleft in the hair shaft in a congenital condition was also not found despite adequate literature search.

In CHAND syndrome, the exact pattern of inheritance is not clearly defined. Earlier believed to be autosomal dominant, but subsequently, a study conducted by Toriello et al.\textsuperscript{[17]} indicated that it is autosomal recessive. This variation in clinical expression produces difficulty in making diagnosis, especially when encountered with a sporadic case and without distinctive features of AEC syndrome like cleft lip/palate. The specific differentiation features between AEC Syndrome and CHAND syndrome are highlighted in Table 1.

This patient has presented with the unique cluster of signs and symptoms which fits into a rare CHAND syndrome; however, an additional bubble hair makes this presentation different from the conventional cases.

**CONCLUSION**

All cases of CHAND syndrome should be thoroughly investigated for associations with other syndromes and anomalies. Genetic evaluation of the affected person is essential for better understanding of the disease. “Bubble hair” morphology on microscopy is a unique feature in this autosomal recessive condition.

**Limitations**

Table 1: Difference between ankyloblepharon-ectodermal defect-cleft lip/cleft palate syndrome and clinical overlapping in the ectodermal dysplasias syndrome

| Features                        | AEC syndrome                  | CHAND syndrome                |
|---------------------------------|-------------------------------|-------------------------------|
| Ankyloblepharon, ectodermal dysplasia syndrome | Curly hairs, ankyloblepharon dysplasia of nail syndrome |
| Mode of inheritance             | Autosomal dominant            | Autosomal recessive           |
| Mutation pattern                | Missense mutation in TP\textsubscript{63} affecting P\textsubscript{63} SAM of gene which is protein-protein interaction domain | Homozygous mutation in PWP\textsubscript{28} MX\textsubscript{28} RIPK\textsubscript{4} |
| Ectrodactyly                    | Present                        | Absent                        |
| Cleft lip                       | Present but not obligatory    | Absent                        |
| Hair                            | Coarse, brittle 8 wiry        | Curly or wooly                |
| Frequent scalp infections       | Present                        | No such complaints            |
| Hypohidrosis                    | Mild hypohidrosis             | No hypohidrosis               |

AEC – Ankyloblepharon-ectodermal defect-cleft lip/cleft palate; CHAND – Curly hair-ankyloblepharon-nail disease

The exact point mutation could not be ascertained for conclusive evidence of this condition being an autosomal recessive rather than a point mutation.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**

There are no conflicts of interest.

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