Congenital hypotrichosis with anodontia in cattle: A genetic, clinical and histological analysis

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Abstract
Hypotrichosis, an almost complete lack of teeth and the complete absence of eccrine nasolabial glands, was observed among the progeny of a normal cow of the black and white German Holstein breed. Similar congenital anomalies are known in humans and mice as X-linked anhidrotic ectodermal dysplasia (ED1), leading to the impaired formation of hair, teeth and sweat glands. The pedigree of the four affected male calves in the investigated cattle family indicated that the described phenotype is inherited as a monogenic X-linked recessive trait. We used a diagnostic reverse transcription-polymerase chain reaction (RT-PCR) assay to study the heredity of a previously reported causative large genomic deletion in the bovine ED1 gene. This test allowed the unequivocal classification of disease carriers that were phenotypically normal. As the clinical, pathological and genetic findings in human ED1 show striking similarities to the described phenotype in cattle, this bovine disorder may serve as an animal model for human ED1.

Sources:


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