Congenital hypotrichosis in Poll Dorset sheep

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Partial or complete absence of hair has been reported as a congenital defect in all domestic animal species (Yager and Scott 1985), but there appear to be few reports of the condition in sheep (Lofstedt 1983). This paper reports congenital hypotrichosis and follicular dysplasia in sheep from a Poll Dorset stud flock.

In October 1989, 2 of about 200 weaners were presented with bald faces, ears and lower legs. Both were ewes about 5 months of age. Eyelashes were absent and there was increased lacrimation. Sinus hairs were present on the face. Skin in affected areas was thickened, wrinkled, erythematous and greasy, with mild scaling. The sheep were otherwise in very good condition. The breeder reported that similar cases had occurred over the previous 10 years, at an average rate of one of 80 to 200 lambs annually. Affected lambs were first noticed at about one month of age, at the time of castration and docking. The lambs' condition at birth was not observed. Affected lambs were killed before 12 months of age, with no improvement in their condition. Their health otherwise had remained normal. There was no known access to primary photosensitising agents.

Both weaners were necropsied and portions of a variety of tissues, including liver, thyroid and skin from a number of sites were fixed in phosphate buffered 10% formalin and processed routinely for histopathology. Microscopic examination of skin from the facial crest revealed an absence of fibres in follicles, follicular keratosis and sebaceous gland hypertrophy and hyperplasia (Figure 1). There was moderate epidermal hyperplasia with orthokeratotic hyperkeratosis and hypergranulosis. In the stratum basale there were scattered foci of hydropic degeneration and disorganisation of basal cells. In the superficial dermis there was mild dysplasia of collagen fibres and mild cuffing of blood vessels by lymphocytes and macrophages. A section of skin from the facial crest of an unaffected 5-month-old weaner ewe from the same flock is shown in Figure 1. In affected sheep, none of the papillae of follicles that could be identified were intimately associated with follicle bulbs, in contrast to skin from the age-matched unaffected sheep. In skin from the lateral aspect of the hock there was marked dilatation of follicles, with follicular keratosis in addition to the changes described above (Figure 2). Skin from other macroscopically affected areas showed similar histological features to that from the facial crest and hock. In some sections, focal cellular crusts were present on the epidermis with neutrophils accumulating in the superficial dermis and migrating through the epidermis. Sweat glands appeared normal. In skin from wool-covered areas normal wool fibres were present, though some follicles were dilated and keratotic, and there was sebaceous gland hypertrophy and hyperplasia. No gross or histological lesions were apparent in other tissues.

Serum was collected from one affected weaner ewe. Gamma glutamyltransferase, glutamate dehydrogenase and aspartate aminotransferase activities and total bilirubin, protein and albumin concentrations were all within this laboratory's reference range.

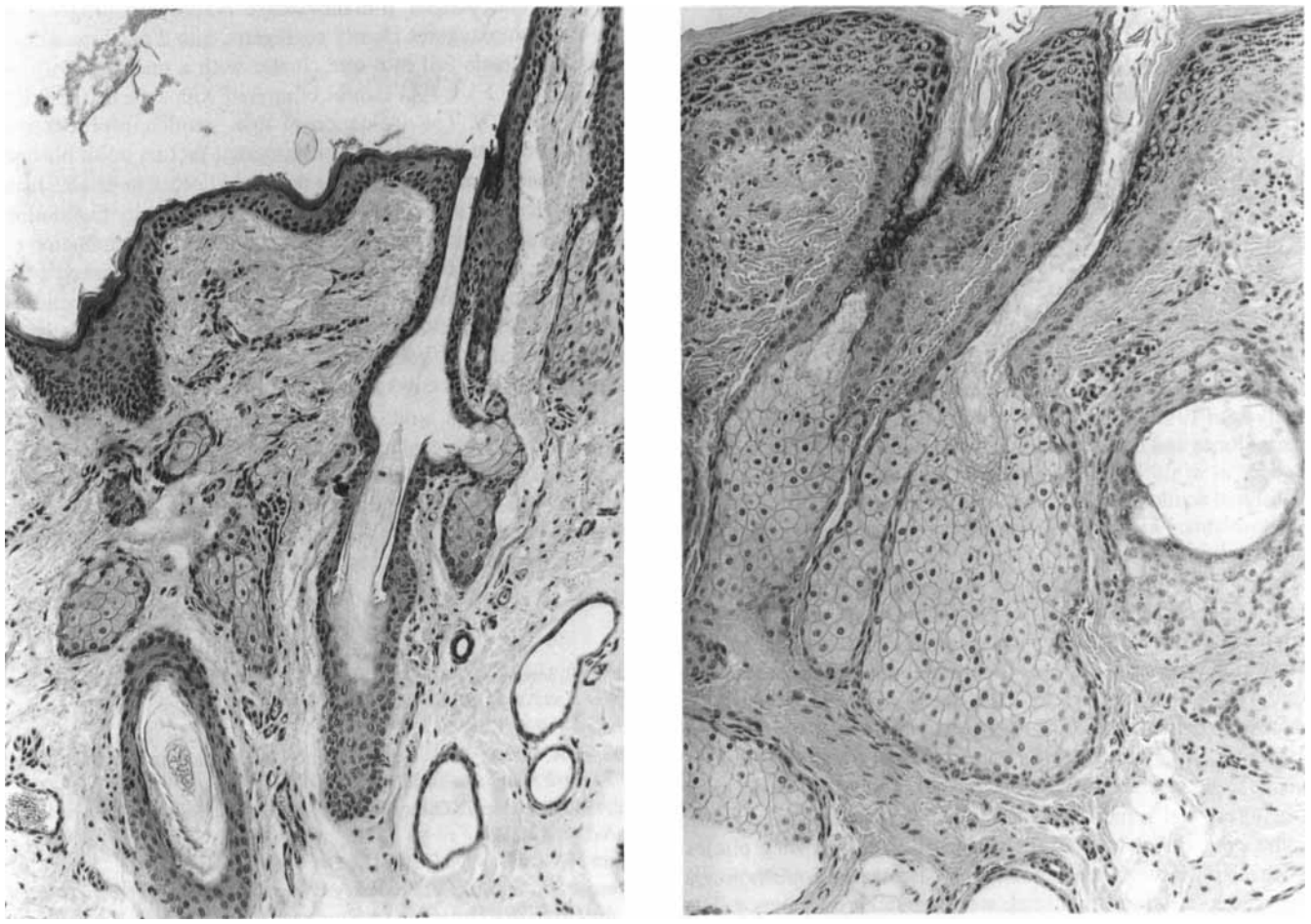

Figure 1. Comparison of histologic section of skin from the facial crest of a normal (left) and affected (right) sheep. In the affected sheep, note the absence of fibres in follicles, follicular keratosis, sebaceous gland hypertrophy and hyperplasia, moderate epidermal hyperplasia with orthokeratotic hyperkeratosis and hypergranulosis, and mononuclear cuffing of superficial dermal blood vessels. Haematoxylin and eosin, x 110.

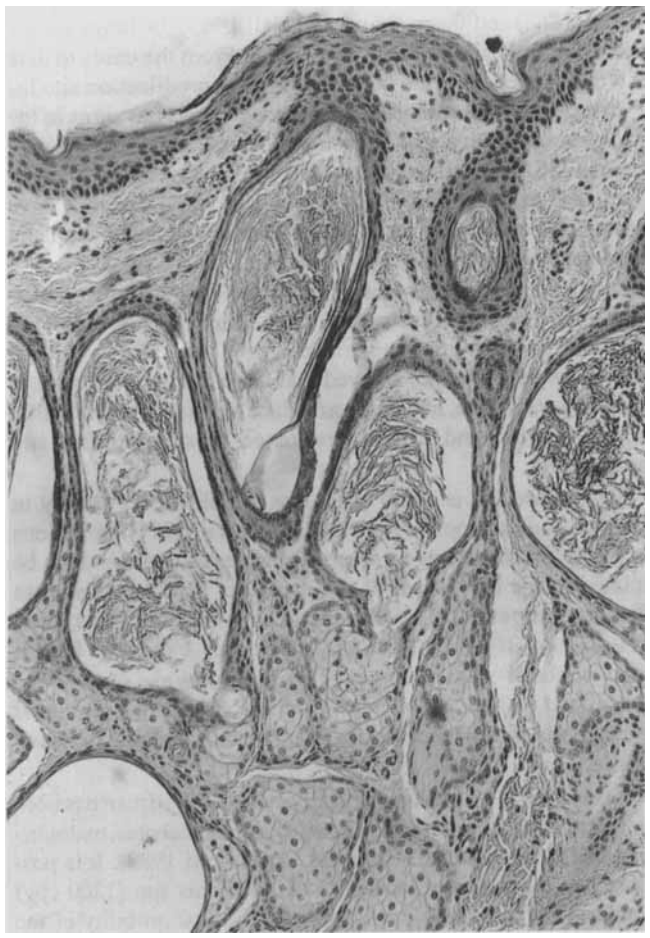

Figure 2. Histologic section of skin from the lateral aspect of the hock of affected sheep, illustrating marked dilatation of follicles and follicular keratosis. H and E x 110.

A diagnosis of congenital hypotrichosis with follicular dysplasia was made. A similar condition in Poll Dorset sheep in Queensland, characterised by progressive loss of hair and wool fibres with age and the filling of follicles with sebum (Dolling and Brooker 1966), was suspected to have an autosomal recessive mode of inheritance. Other reported cases of hypotrichosis in sheep include a black-woolled lamb that was described as being hairless (Popova-Wassina 1931) and a Karakul ram that was totally hairless at birth, but grew a fleece by 15 months of age (Nel 1964). The cases reported in this paper began after the introduction of a new stud ram in 1979 and may have a genetic basis. Data needed for their pedigree analysis are not available, but will be recorded for future cases to establish the mode of inheritance.

The excellent technical assistance of Miss J Sleep is gratefully acknowledged.

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Edward John McBarron OAM

EJ (Eddie) McBarron was awarded an Order of Australia Medal in the Australia Day Honours List "For service to conservation and the environment, and to systematic botany." To these could be added his contributions to history. These represented his long term interests outside his productive professional career.

Eddie graduated in 1942 and was appointed Stock Inspector at Holbrook, and in 1947 he transferred to Albury. Apart from his normal duties he developed an interest in metabolic disorders of cattle and wrote a number of papers on these topics. This was also a time when he displayed his interest in botany and history. He collected and studied the local flora, and this lead to his 160 page *An annotated enumeration of plants in the Albury, Holbrook and Tumbarumba districts of NSW* published by the National Herbarium. In history he studied the local records on the entry, at Albury, of bovine pleuropneumonia into NSW in the 1861 (*Aust Vet J* 1952, **28**:99).

In 1953 he joined the staff of the Glenfield Veterinary Research Station, where his combined veterinary and botanical knowledge lead to 17 publications, including a major work *Medical and veterinary aspects of plant poisons in New South Wales*. In light of recent events concerning algae in NSW river systems, it can be pointed out that Eddie recognised the problem in the 1960s (*Aust Vet J* 1966, **42**:449). When he retired from the position of Principal Veterinary Research Officer in 1978, his plant collection of over 15 000 specimens was accepted readily by the National Herbarium as a significant collection of NSW plants.

After retirement his interests tended to centre on his home town, Campbelltown, again mainly in the areas of botany and history. He made numerous studies on the local flora and through Campbelltown City Council published a number of booklets for the information of local residents. He also published many articles in the local history journal and newspapers. Through these interests he was committed to the conservation of the environment and the heritage of Campbelltown, one of the oldest towns in Australia.

PJ Mylrea

Eddie McBarron ... awarded Order of Australia Medal