

A Case of Cutaneous Fibroma in a Korean Indigenous Cattle

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Abstract : A case of cutaneous fibroma was diagnosed in the skin of the right hindlimb of a Korean indigenous cattle in Kyungpook province, Korea. Grossly, the protruding skin nodules consisted of a solitary mass (1.5×1.5~3.0×3.0 cm) above large grapelike warty nodules (11.0×11.0 cm) on the leg. These masses were firm and rubbery, and the cut surface was gray to white. Histopathologically, the benign neoplastic nodules consisted of spindle-type fibroblasts with collagen. Melanoma, sarcoma, and fibropapilloma were excluded because there was no sign of melanin, muscle type cells, or epidermal proliferation. To our knowledge, this is the first report of a cutaneous fibroma in a Korean indigenous cattle in Korea.

Key words : Cutaneous fibroma, Fibroblasts, Korean indigenous cattle

Introduction

Fibromas are benign cutaneous dermal nodules that arise from dermal or subcutaneous fibroblasts, and are composed of spindle cells with alternating wavy collagen fibers (5,6). They can also originate from visceral organs, including the ovary, uterus, stomach, and intestine (4). Cutaneous fibromas are common in dogs, while they are uncommon in other animals (1). Fibromas and fibrosarcomas occur in adult and aged cattle, with no breed or sex predilection (4).

A fibroma is an uncommon cutaneous neoplasm that usually occurs in the dermis as solitary or multiple nodules (5). Histologically, the fibroblasts produce mature collagen characterized by a wavy, irregular pattern of collagen (5). The differential diagnosis of cutaneous fibroma includes melanoma (3) and sarcoma, which also involve spindle-type cells. Here we report the morphological and histological features of cutaneous fibroma in the skin of a Korean indigenous cattle.

Case Report

A 1-year-old male Korean indigenous cattle with hairless, elevated, dermal nodules on the right hindlimb was bred in a farm in Kyungpook Province, Korea. The skin nodules consisted of a solitary mass (1.5×1.5~3.0×3.0 cm) on the leg above large grapelike warty nodules (11.0×11.0 cm) (Fig 1). The physical examination revealed a painful protruding mass. This mass was firm and rubbery, with a gray to white cut surface. Pieces of skin were removed surgically to make

the histological diagnosis.

Tissues from the mass were collected and fixed in 10% neutral buffered formalin. These tissues were dehydrated, embedded in paraffin wax, sectioned at 4 microns, and stained with hematoxylin and eosin (HE). Selected sections were stained with Masson's trichrome and van Gieson stain to distinguish collagen from muscle tissue. Fontana-Masson stain was also used to detect melanin.

Discussion

In the HE-stained sections, the nodules consisted of a wavy pattern of collagenous fibers and uniform spindle-shaped cells with fusiform normochromatic nuclei and indistinct eosinophilic cytoplasm in the dermis. There was no sign of epidermal proliferation. The spindle cells in the dermis were arranged in a stratiform pattern along with alternating layers of collagen fibers (Fig 2A). Mitotic figures were very rare. There were no signs of malignancy, such as irregular cellular morphology, invasive tendency, or giant neoplastic cells. The epidermis showed mild hyperplasia. The differential diagnosis included fibroma, melanoma, and sarcoma.

To examine the collagen in the mass (Fig 2B), sections were stained with Masson's trichrome. These stained blue diffusely, suggesting that collagenous fibers filled the mass. The nuclei stained black and the cytoplasm stained red (Fig 2B). Van Gieson staining also revealed collagen, but no muscle cells (Fig 2C). In addition, Fontana-Masson staining showed that the spindle cells in the mass did not contain melanin granules (Fig 2D).

Based on the histochemical results, the nodules were a dermal fibroma resulting from an increase in collagen-produc-

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Fig 1. Gross finding of a cutaneous fibroma in a Korean indigenous cattle. Multiple grapelike nodules are seen on the right hindlimb.

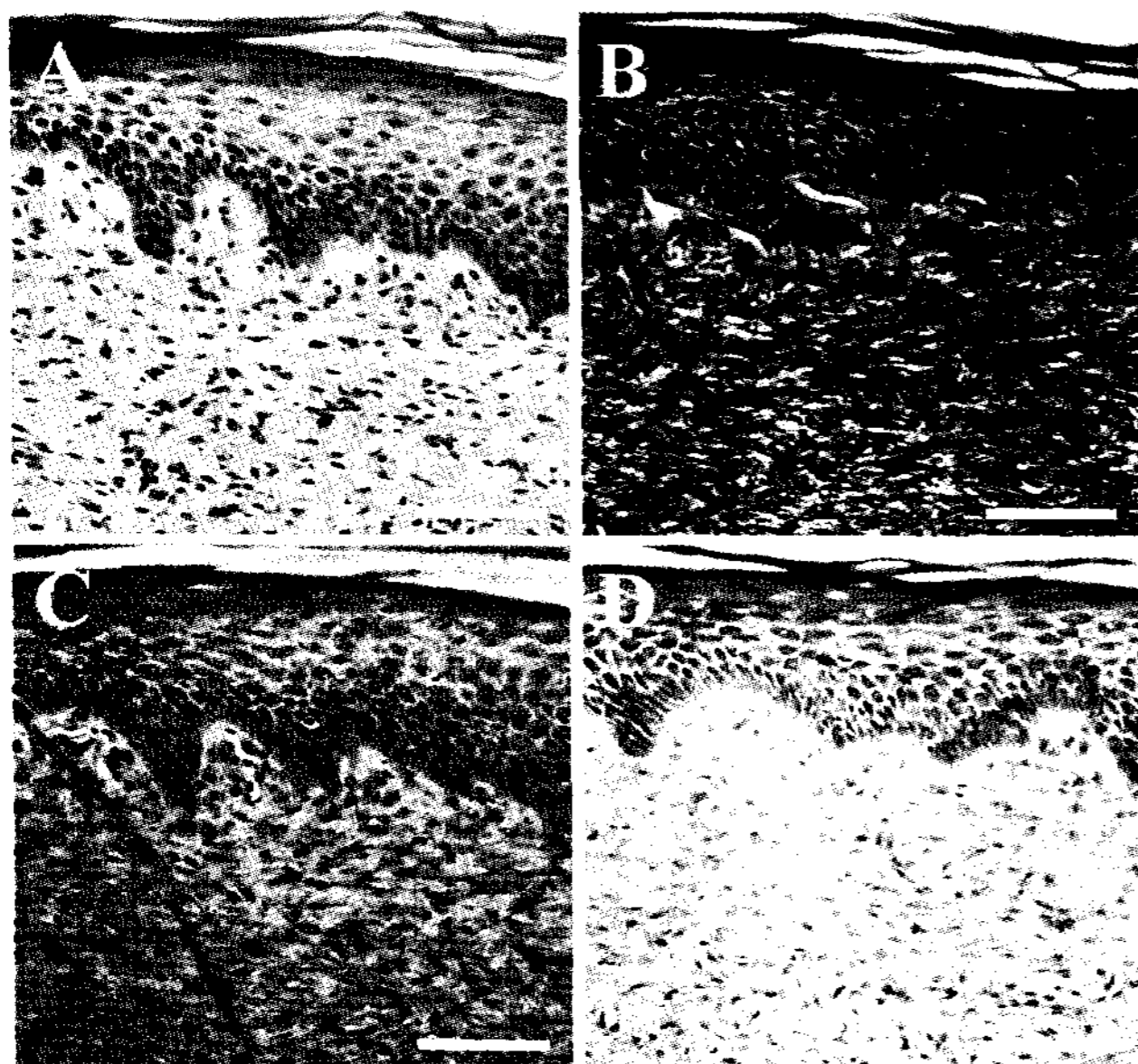


Fig 2. Histological findings of the cutaneous fibroma. A, Hematoxylin and eosin stain. B, Masson's trichrome stain. C, van Gieson stain. D, Fontana-Masson stain. Scale bars, A-D: 200 μ m.

ing fibrocytes in the dermis. The diagnosis was a cutaneous fibroma in a Korean indigenous cattle. Melanoma and sarcoma were excluded because no muscle cells or melanin were identified on histochemical staining with the van Gieson and Fontana-Masson methods, respectively. Based on the gross warty appearance of the dermal nodules, fibropapilloma was also considered in the differential diagnosis. According to a previous report (5), a fibropapilloma should show features of acanthosis, hyperkeratosis, the down-growth of rete-ridges, and the dermal proliferation of plump fibroblasts microscopically. However, we could not detect any proliferation disorder of the epidermis in the dermal nodules.

Papillomaviruses are associated with skin papillomas or fibropapillomas in all domestic animals, except the cat (5). Dermatofibroma had also been associated with papillomavirus infection in cattle (2), so we cannot exclude the possibility that this animal had a papillomavirus infection. Considering all the findings, a cutaneous fibroma consisting of spindle cells was identified in the hindlimb skin of a Korean indigenous cattle in Kyungpook Province, Korea.

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