

## A Rare Case of Ossifying Granular Cell (Abrikossoff) Tumour

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Sir,

Granular cell tumours first described by Abrikossoff (1), are uncommon and usually present as small non-tender solitary nodules. We report here for the first time a case of a granular cell tumour with marked osseous metaplasia on the back of a 68-year-old man. The lesion showed typical features of a granular cell tumour, with the unusual feature of prominent bone formation under microscopic examination. To our knowledge, ossification has not previously been reported in a granular cell tumour.

### CASE REPORT

A 68-year-old man presented with a slowly enlarging, solitary subcutaneous nodule on his back, which had developed over the past 5 years. Physical examination showed a non-tender, hard nodule measuring 8 mm in diameter on the right upper back. There were no palpable lymph nodes. An excision biopsy specimen showed several well-circumscribed nests of tumour cells in the

reticular dermis, which were surrounded by interconnecting trabeculae of bone (Fig. 1A). The tumour consisted of nests of polygonal cells with round to oval-shaped nuclei and abundant eosinophilic granular cytoplasm (Fig. 1B). The trabeculae were composed of mineralized osteoids with central lacunae housing osteocytes, and osteoblasts rimmed the periphery of the bone (Fig. 1C). Artificial clefts were formed between the trabeculae and cytoplasmic borders of tumour cells. There was neither cytological pleomorphism nor mitotic activity, and no cartilage was found in the lesion. The granular cytoplasm was positive for the periodic acid Schiff-reaction and resistant to diastase (not shown). Immunohistochemically, tumour cells showed strong positivity for S-100 protein (Fig. 1D), neurone-specific enolase (NSE) and focal immunoreactivity for CD68 (results not shown). The staining results for carcino-embryonic antigen and cytokeratin were negative. The tumour was excised completely, and no evidence of recurrence or metastases has been observed for 3 years after resection.

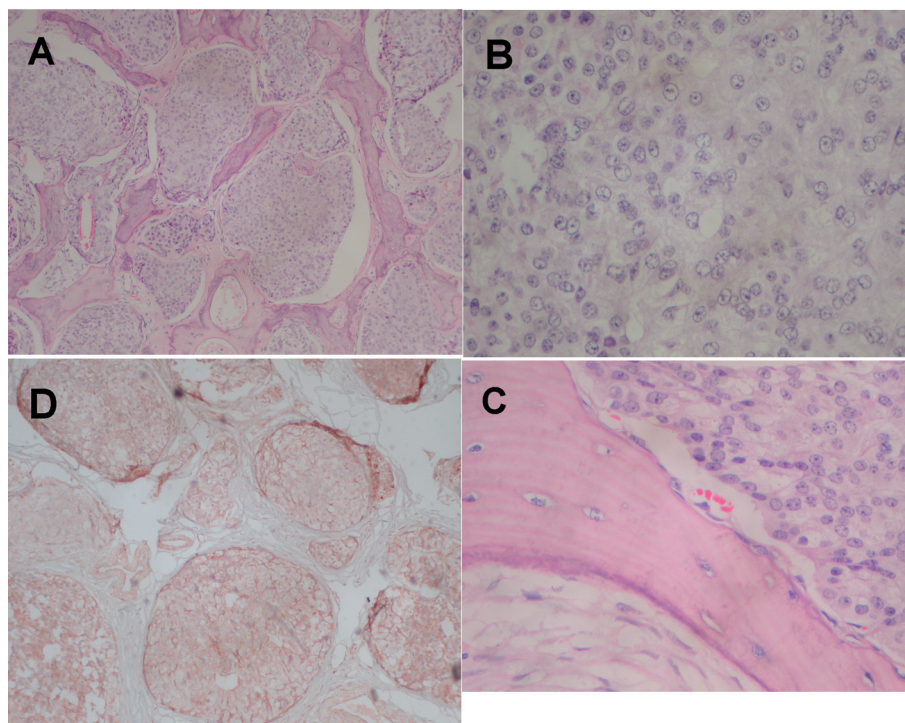


Fig. 1. (A) The tumour shows characteristic granular cell nests surrounded by bony trabeculae (original magnification HE×40). (B) The tumour nests of polygonal cells show round- to oval-shaped nuclei and abundant eosinophilic granular cytoplasm (original magnification HE×200). (C) The bony trabeculae composed of mineralized osteoids with central lacunae housing osteocytes and osteoblasts rimmed the periphery of the bone (original magnification HE×200). (D) The tumour cells show strongly positive immunoreactivity for S-100 protein (original magnification HE×100).

## DISCUSSION

First described in 1926 in a patient who had a tongue lesion (1), granular cell tumours have since been found throughout the body. Clinically, they usually present with a solitary, non-tender, small, slowly enlarging subcutaneous nodule. The histological features of the classical granular cell tumour consist of polygonal cells with eosinophilic granular cytoplasm and small nuclei; they show strong positivity for S-100, NSE and vimentin, which allows for easy diagnosis (2).

The origin of granular cell tumours is uncertain. Initially, they were thought to arise from skeletal muscle because of their cytological resemblance to myocytes (1). However, the results of recent studies suggest granular cell tumours are derived from Schwann cells (3). The distinctive feature of abundant granular cytoplasm, representing lysosomal structures and the positivity for both S-100 and NSE support this hypothesis.

Ossification within the skin is an uncommon microscopic finding that may occur in various circumstances. It may be a primary event without a demonstrable preceding cutaneous lesion (e.g. osteoma cutis, Albright hereditary osteodystrophy). Alternatively, cutaneous ossification may be secondary to local conditions, such as trauma, scarring, inflammatory processes, or, most commonly, cutaneous tumours. The cutaneous tumours with accompanying bone formation include: pilomatrixoma, basal cell carcinoma, acquired melanocytic nevi, Spitz nevi, blue nevi, malignant melanoma, and fibrohistiocytic tumour, such as dermatofibroma, malignant fibrous histiocytoma, plexiform fibrohistiocytic tumour, and atypical fibroxanthoma (4). A focus of secondary ossification can be misdiagnosed as an osteoma cutis if elements of the underlying lesions are obscured. This error is especially serious if the underlying lesion is a malignant tumour such as melanoma (5).

Although there has been no report in the literature of granular cell tumours with ossification, ossification

is a well-recognized phenomenon that occurs rarely in neural neoplasms such as neurofibroma, perineurioma, schwannoma, malignant peripheral nerve sheath tumour and in non-neoplastic conditions of the peripheral nerves, such as fibrolipomatous hamartoma of nerve and postamputation neuromas (6–9). Moreover, Kappor et al. (10) theorized that pluripotential cells such as Schwann cells and other endoneuronal and perineuronal cells may contain metaplastic elements, such as cartilage and bone. Considering this metaplastic potential of neuronal cells into bone, the presence of dense ossification in a granular cell tumour, probably originating from Schwann cells, is not entirely surprising.

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