Hypercalcemia of Malignancy Associated with Trichilemmal Carcinoma in Burn Scar

Sir,

Humoral hypercalcemia of malignancy (HHM) is a cancer-related hypercalcemia caused by tumoral secretion of parathyroid hormone-related protein (PTHrP) and is a potentially life-threatening complication (1). This condition has been reported in patients with various types of cancers, including lung cancer, renal cell carcinoma, breast cancer, prostate cancer and melanoma. HHM in patients with squamous cell carcinoma (SCC) of the skin has rarely been reported (2–7). We report here a case of HHM associated with a trichilemmal carcinoma that developed in a burn scar of the scalp.

CASE REPORT

A 42-year-old man presented with a large tumor on his occipital area, where he had suffered a burn at the age of 2 years. Two years before his visit to our clinic he noticed a crusted eruption, and a tumor with a putrid smell rapidly developed during the 6 months prior to his first visit. Physical examination revealed a cauliflower-like tumor, 11 cm in diameter, with necrotic tissues on the right-hand side of his occipital area (Fig. 1). Bleeding from the surface was also seen. The burn scar around the tumor was not obvious. Lymphadenopathy of the neck was not detected. Hematologic tests gave the following values: red blood cell count $294 \times 10^4/mm^3$ (normal $410-530 \times 10^4$); hemoglobin 10.2 g/dl (normal 13.6–17.0); white blood cell count $15{,}300/mm^3$ (normal 4,000–8,500); and platelet count $43.9 \times 10^4/mm^3$ (normal $13-30 \times 10^4$). Abnormal blood chemistry values were as follows: albumin 3.1 g/dl (normal 4.1–5.0); C-reactive protein 6.51 mg/dl (normal <0.3); calcium 14.1 mg/dl (normal 8.4–9.9); and PTHrP 4.0 pmol/l (normal <0.6). The value for SCC-related antigen was within normal limits. Chest X-ray and gallium-67 scintigraphy did not reveal any visceral involvement. Computerized tomography of the scalp did not show any underlying bone involvement. Treatment with intravenous saline and pamidronate disodium was initiated and a decrease in serum calcium levels to 9.3 mg/dl occurred 3 days later. Surgical excision with a split skin graft was performed and the PTHrP value decreased to 0.6 pmol/l. The patient has since manifested no evidence of tumor recurrence or metastasis for more than a year. Pathologically, the tumor was papillomatous and showed lobular infiltrative proliferations that occupied the dermis (Fig. 2). The overlying epidermis had been totally replaced by the tumorous epithelium, but the edge of the tumor lobule was connected to the normal epidermis with a clear-cut demarcation. The tumor cells were mostly large with clear cytoplasm and had atypical nuclei. Mitotic figures were frequently seen. Trichilemmal keratinization, as shown by foci of abrupt keratinization without granular cells, was frequently observed (Fig. 2). The clear tumor cells contained periodic acid-Schiff-positive, diastase-sensitive materials.

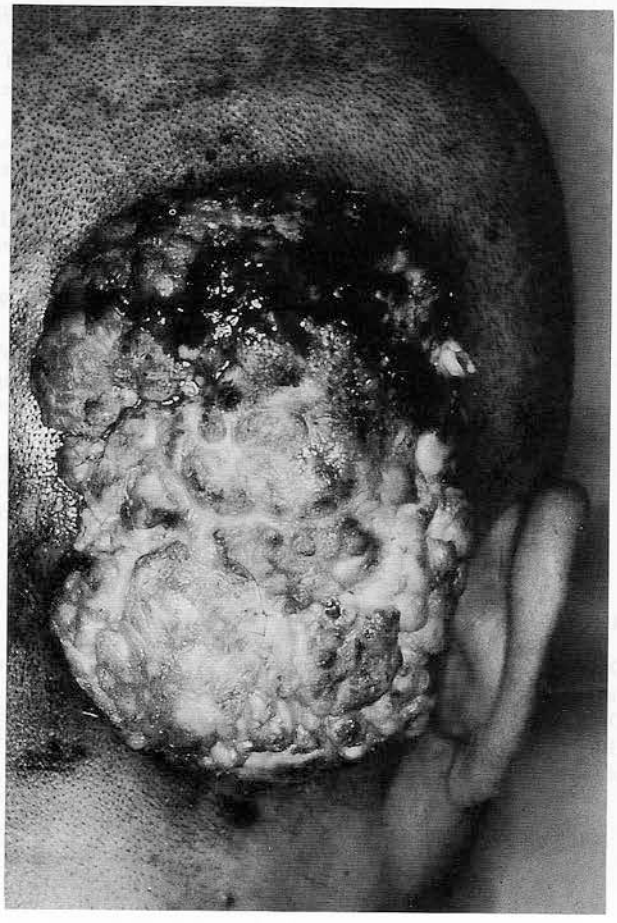

Fig. 1. Large cauliflower-like tumor on the scalp.

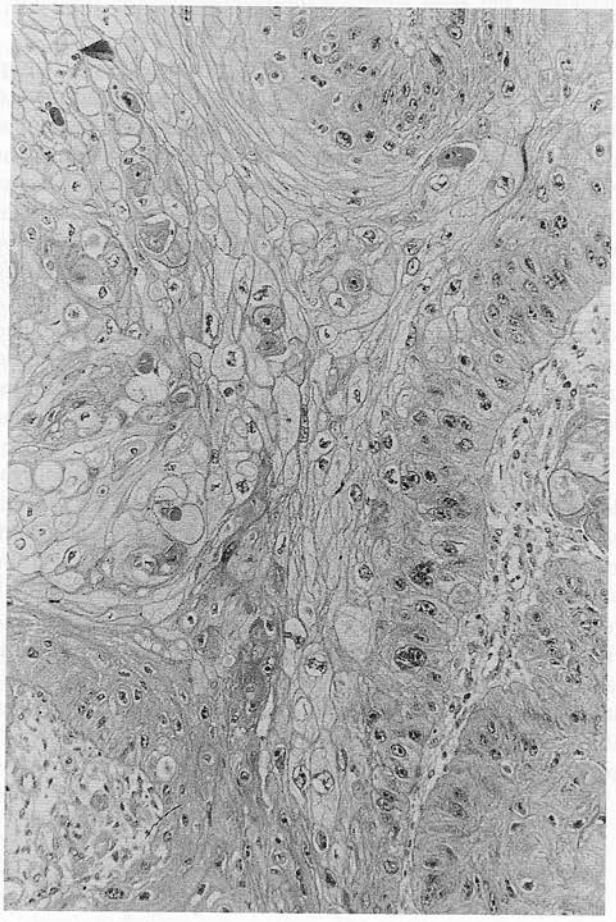

Fig. 2. Cells showing atypical nuclei and trichilemmal keratinization (hematoxylin and eosin stain; original magnification ×140).

DISCUSSION

Several cases of cutaneous SCC associated with HHM with increased levels of serum PTHrP have been reported (2–7). Most of these cases had large tumors and the prognoses were fairly poor. We present the first case, to our knowledge, of HHM associated with a large trichilemmal carcinoma of the scalp. Trichilemmal carcinomas, an uncommon type of cutaneous tumor, are thought to be derived from the outer root sheaths of hair follicles. Immunohistochemical studies for the expression of PTHrP in the skin revealed that not only epidermal keratinocytes but also hair follicles were positive (8–10). In addition, some skin tumors showing hair follicle differentiation, such as trichoepithelioma and trichofolliculoma, were shown to be positive for PTHrP (8). Although we did not perform an immunohistochemical study to analyze the expression of PTHrP in our patient's tumor, the quick decrease in serum PTHrP level after surgical excision of the tumor strongly indicated that this tumor secreted PTHrP, which led to HHM.

Trichilemmal carcinoma usually appears in elderly individuals, primarily on the sun-exposed skin of the face (11). Our patient stated that he had suffered a burn at the tumor site on his scalp during his childhood. We could not confirm the burn scar, probably due to replacement of that scar by the large tumor tissue. One previous study, to our knowledge, has reported the development of trichilemmal carcinoma in a burn scar (12). Although HHM associated with cutaneous SCC usually has a poor prognosis (4–7), the present case has shown no evidence of recurrence and/or metastasis for more than a year after the surgical treatment. This might be due to the fact that the clinical behavior of trichilemmal carcinoma is relatively benign compared with usual SCC of the skin (11).

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