



Development of a Giant Cornu Cutaneum in a Patient with a Coincidental Foreknown Intracranial Meningioma

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ABSTRACT

The diagnostic spectrum for scalp lesions is extensive and comprises either benign or malignant features. Cornu cutaneum (CC) is a well-recognized condition; however, its origin and natural course are not always obvious. We present the case of a 78-year-old male patient who was diagnosed with intracranial meningioma in 2014 and who subsequently refused treatment. He presented a new scalp lesion, resembling a horn, in the vertex region 1.5 years after his last follow-up. The lesion was excised, and the patient was histopathologically diagnosed as having CC caused by squamous cell carcinoma. CC can be easily recognized when it resembles animal horn; however, it can assume different shapes that require a physician to be vigilant. Moreover, a lesion's benign or malignant nature is not obvious in all cases. Hard, protruding scalp lesions should be examined for CC, and a histopathological evaluation should be performed to make a definitive diagnosis.

KEYWORDS: Cornu cutaneum, Cutaneous horn, Scalp, Squamous cell carcinoma, Surgery

INTRODUCTION

Cutaneous scalp lesions have a wide diagnostic spectrum. Our previous study revealed that scalp lesions may reflect a clinically significant pathology in 7.8% of patients (6).

Cutaneous horn [cornu cutaneum (CC)] is an unfamiliar entity to most neurosurgeons. It has a distinct shape and is a dense hyperkeratotic lesion that protrudes from the skin and is named after its resemblance to animal horns (2). These "horns" are mostly diagnosed in skin regions exposed to radiation, burns, or the sun. The face is a common location for these lesions; however, the scalp, nose, ears, chest, and shoulders are also affected (4). The natural course of cutaneous horns is unpredictable and depends on the initial diagnosis. The lesion can be assumed to be both benign and premalignant/malignant based on its appearance (7).

To the best of our knowledge, the following report is the first showing an incidental association of a cutaneous horn and an intracranial mass lesion in an incompatible patient. This case exemplifies the natural course and possible extent of an untreated scalp CC.

CASE REPORT

A 78-year-old male patient was admitted to a neurosurgery clinic by his son to consult for treatment of an intracranial mass lesion. The intracranial mass was diagnosed in 2014; surgical treatment and gamma knife treatment were recommended; however, the patient rejected the treatment and continued living on his farm.

Despite the patient's efforts to hide the scalp lesion under a traditional head cap, the son noted sporadic bleeding from the base of the lesion. A neurological evaluation revealed no

motor deficit either in the extremities or in the eye. There was a scalp lesion located on the vertex. The protruding lesion was curvilinear and hard in texture, resembling an animal horn. The base of the lesion was lacerated (Figure 1A-C).

The patient underwent a radiological evaluation. Skull X-ray and computed tomography (CT) scans revealed an intact calvarium without bone destruction (Figure 2A, B). Magnetic resonance imaging (MRI) revealed a mass lesion located in the right medial sphenoid wing region, extending to the cavernous sinus. The scalp lesion did not extend into the brain tissue (Figure 3A-D); the dimensions of the lesion were similar to those in 2014 and 2015.

The patient consulted the Department of Dermatology and Department of Plastic and Reconstructive Surgery. The preoperative diagnosis was CC due to a presumptive malignancy.

The lesion was excised with a 1-cm peripheral margin and periosteum at the deep margin. There was no infiltration to the calvarium. The defect was reconstructed with a bipedicle scalp flap advanced from the posterior margin of the defect. The flap donor site was grafted with a split-skin graft from the thigh (Figure 4A-D). A histopathological evaluation revealed a well-differentiated squamous cell carcinoma (SCC). Lymphadenopathy was not encountered after a radiological

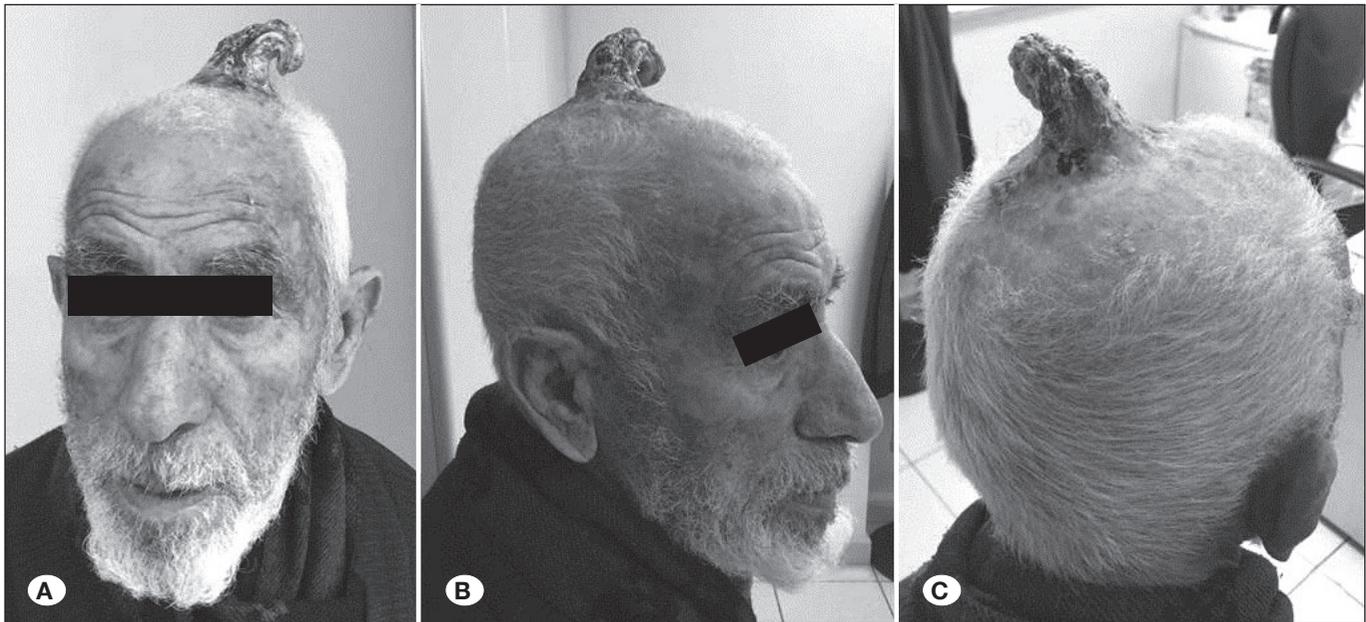


Figure 1A-C: A 78-year-old patient presented with a hard, protruding lesion on the vertex that deviated to left side and had a coarse surface.

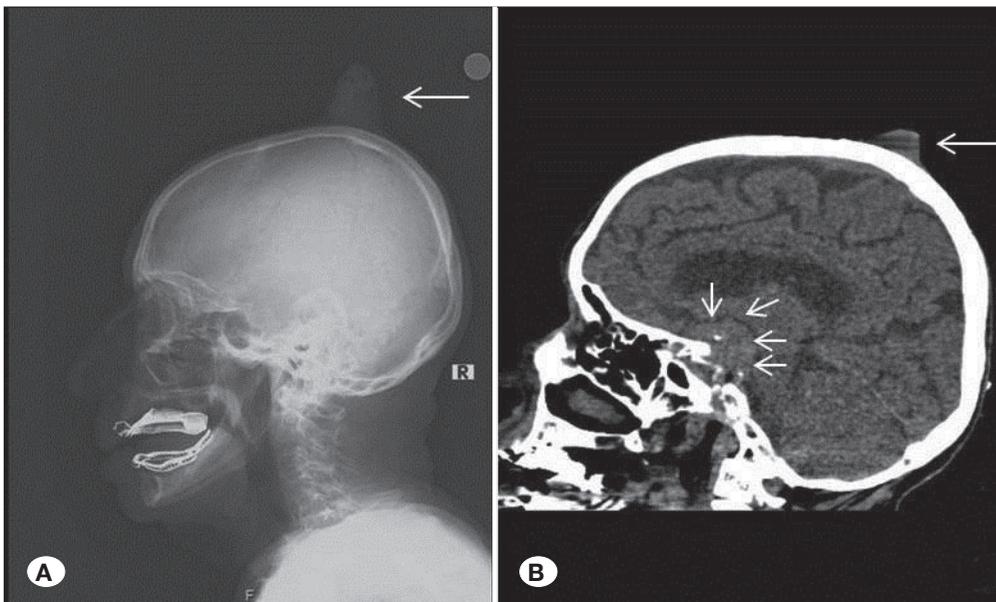


Figure 2: **A)** A roentgenogram revealed a protruding lesion (white arrow). **B)** A sagittal CT indicated the base of the protruding lesion (long white arrow) from the calvarium. The small white arrows demonstrated the meningioma located in the medial sphenoid wing.

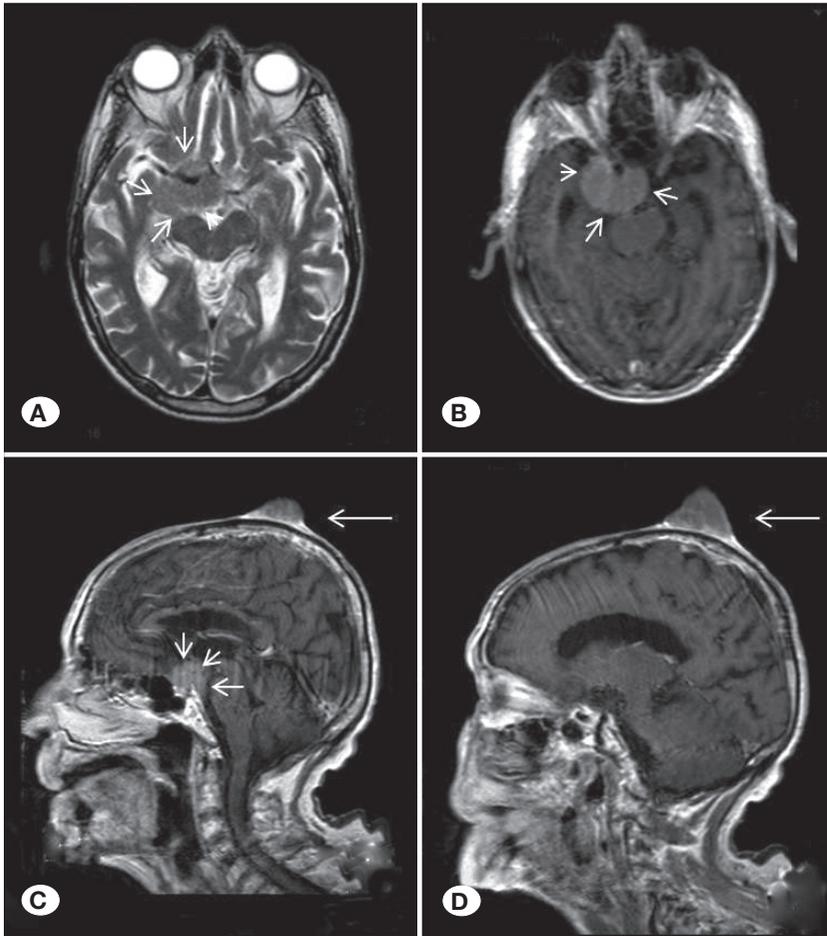


Figure 3: **A)** Axial T2-weighted MRI demonstrated a meningioma (small white arrows) located in the right sphenoid wing; the meningioma extended to the cavernous sinus and enclosed the internal carotid artery. **B)** Post-contrast T1-weighted axial MRI indicated the contrast-enhanced lesion (small white arrows); **C, D)** Post-contrast sagittal MRI showed the intracranial mass (small white arrows) and the lesion (long white arrow) protruding from the calvarium. There was no penetration to the cranial bone.

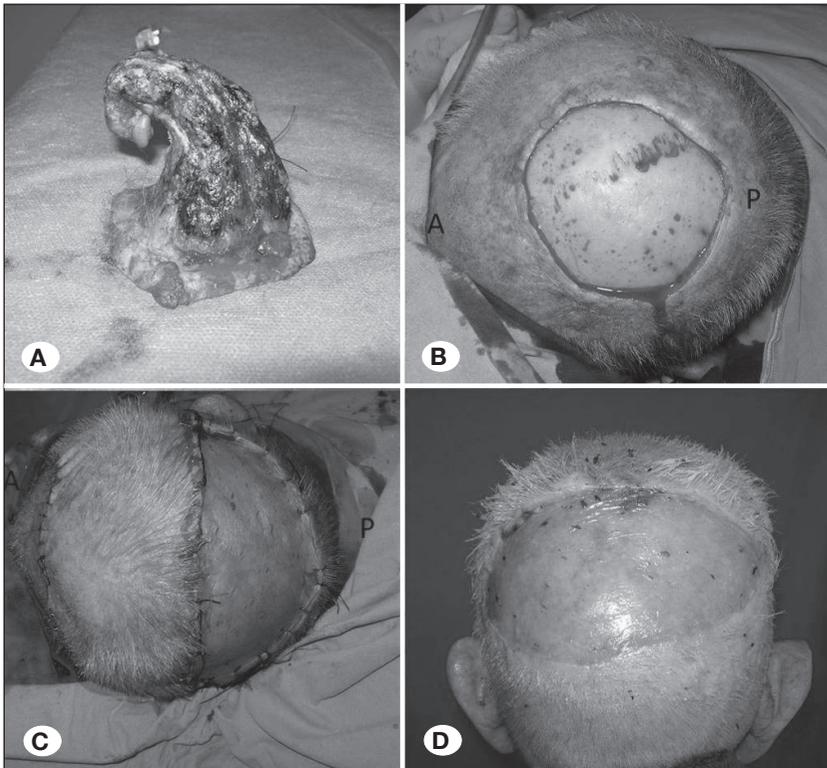


Figure 4: **A)** Cornu cutaneum in the preoperative view. **B)** The lesion was excised with a 1-cm peripheral surgical margin and periosteum at the deep margin. A sagittal suture could be seen (A: anterior, P: posterior). **C)** The defect was reconstructed with a bipedicle flap advanced from the posterior scalp region (A: anterior, P: posterior). **D)** Postoperative view from the back side 1 month after surgery. The flap and graft were well constructed and remained viable.

assessment of the neck. The patient consulted the Department of Radiation Oncology; however, additional treatment was not required. The patient was followed up for recurrence; however, there was no recurrence of the cutaneous horn 12 months after surgery.

During this follow-up period, 8 months after surgery, the patient suffered from intracerebral hemorrhage and developed left hemiplegia.

Informed consent was obtained from the patient for preparing and publishing this report.

■ DISCUSSION

CC typically affects people aged above 50 years and is a skin extension composed of cornified keratinous material (3). The lesions may reflect a benign or malignant underlying condition, arising from seborrheic keratosis or SCC (2).

The incidence of a benign origin of the lesion varied in all prior series on CC; Yu et al. reported benign lesions in 61.1% of patients based on their retrospective analysis of 643 patients (7). However, according to Mantese et al., premalignant/malignant lesions (51.35%) were more common than benign lesions, arising from conditions such as viral warts, keratoacanthoma, or seborrheic keratosis (41.44%) (3).

Yu et al. described four major characteristics associated with malignant CC: age, gender, location, and lesion dimension (7).

Patients with malignant pathologies were older than those with benign pathologies, the average difference being 8.9 years. This finding was also supported by Mantese et al. (3). There were no malignant lesions in individuals younger than 50 years of age in that series. Moreover, age stratification showed that between the ages of 50–69 and 70–89 years, the incidence of premalignant/malignant lesions was 58.25% and 60.5%, respectively (3). Similarly, our patient was 78 years old. His follow-up radiological images obtained in 2014 and 2015 showed a distant intracranial meningioma and an intact scalp without any lesion. However, after 1.5 years of missing follow-up treatments, the patient developed a large cutaneous horn, which was later diagnosed as SCC.

The gender of the patient and the location of the horn are also related to the malignant nature of the lesion, as reported by Yu et al. (7). Male sex increases the likelihood of a malignant lesion. Moreover, skin regions frequently exposed to the sun (nose, back side of the hands, scalp, forearms, and face) were 2.1-times more likely to demonstrate premalignant/malignant lesions (7). Copcu et al. presented 11 patients with the lesion, 3 of whom had the lesion located on the scalp. These patients were diagnosed with solar keratosis and had malignant lesions located in the ear, buccal mucosa, and hand (1).

CC appears more commonly in females than in males (64.68% in females vs. 35.14% in males). However, an increased risk of malignant lesions in male patients is not a ubiquitous finding (3); pre-malignant/malignant lesions comprised 58.3% of the lesions in females and 58.9% of the lesions in males,

respectively. The figure was kept similar only considering the malignant lesions (8.3% in females vs. 5.12% in males) (3).

The last malignancy criterion was geometric features of the horn. Yu et al. indicated that lesions with a wider base than height were more likely to be malignant (7). The median height and base diameters were reportedly 0.6 cm (0.2–4 cm) and 0.5 cm (0.1–4 cm), respectively (3). However, our patient's lesion was approximately 5 cm long and, considering its curvature, had a much higher height-to-base ratio. Moreover, the lesion grew to this size in less than 1.5 years. Rapid development and increasing height might be an indirect sign of malignancy.

There is no diagnostic association between intracranial meningioma and CC. In the literature, cutaneous horns, particularly those that are malignant, were associated with other malignant/premalignant lesions (5). However, we could not make any such assumptions. Genetic predisposition to neoplasia could be a factor. Patients receiving radiation treatments for intracranial lesions could be at an increased risk for the development of CC; however, this was not the case in our patient.

■ CONCLUSION

CC is a well-recognized condition, particularly among dermatologists and plastic surgeons; however, it is not well known to those in the field of neurosurgery. CC can assume various geometric shapes, some of which resemble a horn, making diagnosis effortless (particularly for lesions having a size similar to that of our patient's). However, the benign or malignant nature of the lesion cannot be determined based on only its appearance. Rapid development and hemorrhage around the base may be alerting. Based on the literature review and our study, scalp CC should be assumed to be malignant until a histopathological diagnosis proves otherwise.

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