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Unusual Scalp Process Revealing a Thyroid Cancer: "Illustrative Case"

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Abstract

Background: Thyroid cancers commonly display slow evolution with local and or regional extension. The classic presentation is a painless nodule of the thyroid region in a euthyroid patient. Sometimes, the nodule is discovered only on ultrasonography. Cervical lymph node is often seen in papillary thyroid cancer due to their propensity to invade lymph node. This means that follicular thyroid cancers are more insidious. **Observation:** We report a painless slow-growing lesion of the scalp revealing a skull metastasis of thyroid cancer. Despite catastrophic intraoperative bleeding, a total removal was achieved. **Lessons:** Thus, in addition to local and regional control in the management of thyroid cancers, distant metastasis should be surgically removed to provide the best chance to prolong the patient's survival. Moreover, neurosurgeon must be prepared to deal with massive bleeding in skull metastasis of thyroid cancer.

Keywords

Thyroid Cancer, Follicular Thyroid Cancer, Papillary Thyroid Cancer, Subcutaneous, Metastasis, Surgery

1. Introduction

The incidence of thyroid cancers is high in the population with cervical irradia-

tion during childhood [1]. These cancers account for 1% to 2% of all neoplasm, and 90% of endocrine cancers [2]. Follicular thyroid cancer is prone to occur in older patients with higher mortality and five-year disease-specific survival of around 35% [3] [4]. Distance metastasis of follicular thyroid cancer at presentation is shown in 1% to 9% of thyroid cancers, whereas distance metastases after initial treatment occurs in about 7% to 23%; and lung represents le more common site [3] [4]. However, skull metastasis is rare and represents 2.5% of thyroid cancers [3]. Its management requires a multidisciplinary approach and a multimodality treatment [4]. Surgery is a cornerstone in the management of these skull metastases but complete removal is achieved only in 50% of cases because of hypervascularization leading to massive bleeding during surgery [3].

We report a case of the frontal subcutaneous process with an intraoperative hemorrhagic shock revealing follicular thyroid cancer after its complete removal.

2. Illustrative Case

This 60-year-old woman without past medical history was admitted to our department for a painless slow-growing frontal subcutaneous mass for 5 years. Clinical and neurological examination was normal. CT scan revealed a right frontal subcutaneous isodense process. This lesion seems to be intradiploic and progressively destroys both tables. On the left frontal side, We noticed a purely intradiploic lesion without genuine osteolysis of the outer and inner table. Post-contrast CT Scan displayed an intense enhancement of the lesion (**Figure 1**). The preoperative diagnosis hypothesis was suggestive of the aneurysmal bone cyst, Langerhans cells histiocytosis, and intradiploic cavernoma. Intraoperative investigations of the right lesion revealed a tumor, which showed massive bleeding with deep hypotension during surgery. The systolic blood pressure suddenly falls from 120 mmHg to 60 mmHg within ten minutes associated with tachycardia over 120 beats per minute. We performed hemostasis by compression in the process with compresses. A quick transfusion of 2 packs of red blood cells allowed us to reach 100-mmHg systolic blood pressure. At this step, We continued the surgical procedure. Despite this difficult hemostasis, total removal was achieved (**Figure 2**).

The postoperative period was uneventful. A control CT Scan demonstrated a hematoma of the resection cavity. Pathological examination demonstrates on gross examination a 10 × 8 × 3 cm grayish-white mass of rubbery friable consistency with hemorrhagic changes (**Figure 3(A)**). At the microscopic examination, it was a carcinomatous proliferation of vesicular architecture. They were thyroid-type vesicles of varying sizes. The vesicles were occupied by an abundant colloid substance and were lined with moderately atypical epithelial cells (**Figure 3(B)**). Pathological examination revealed a metastasis of follicular thyroid cancer. The patient was sent to ENT surgeons and further investigations revealed thyroid cancer and thyroid hormone suppression therapy was applied because of the unavailability of radioiodine therapy. A one-year follow-up, the patient remains asymptomatic without recurrence.

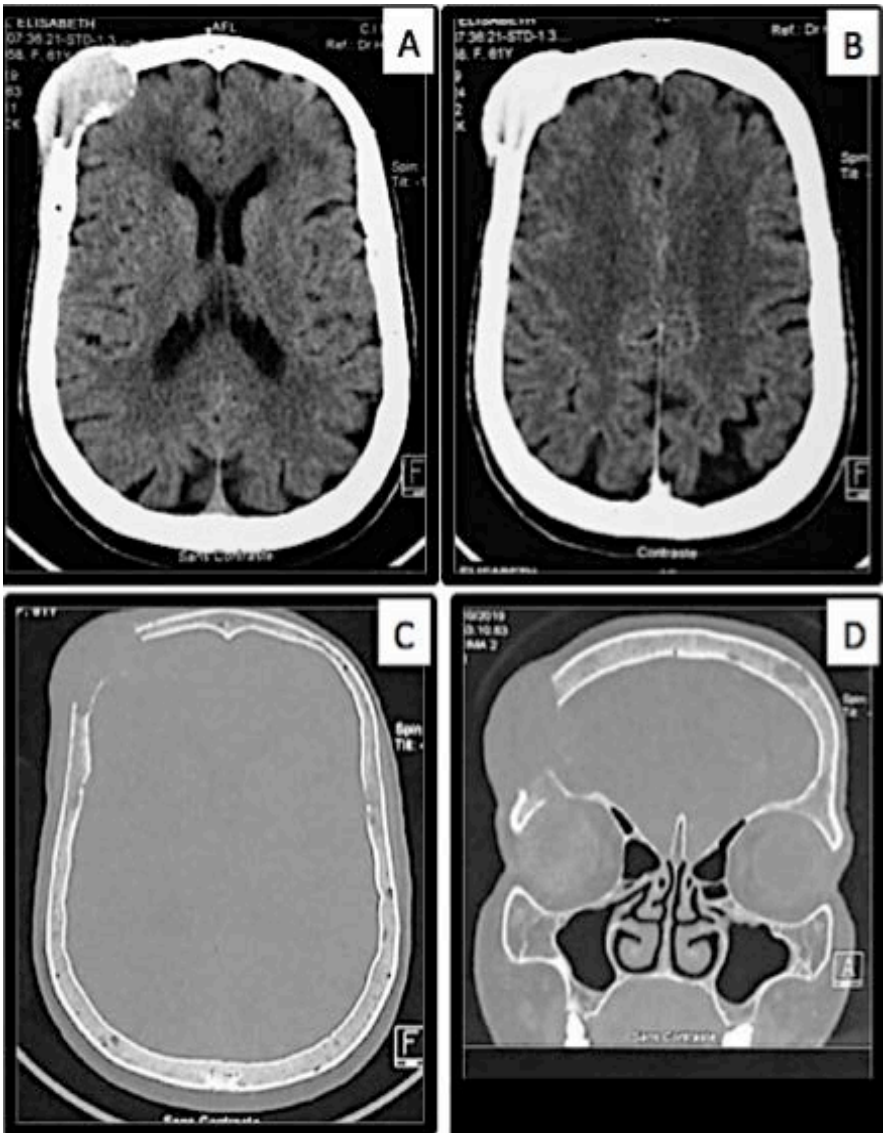

Figure 1. (A)Preoperative CT Scan showing a right intraosseous frontal process; (B) With intense enhancement on post-contrast images; (C) And osteolysis on bone slices; (D) There is also a left frontal intradiploic lesion.

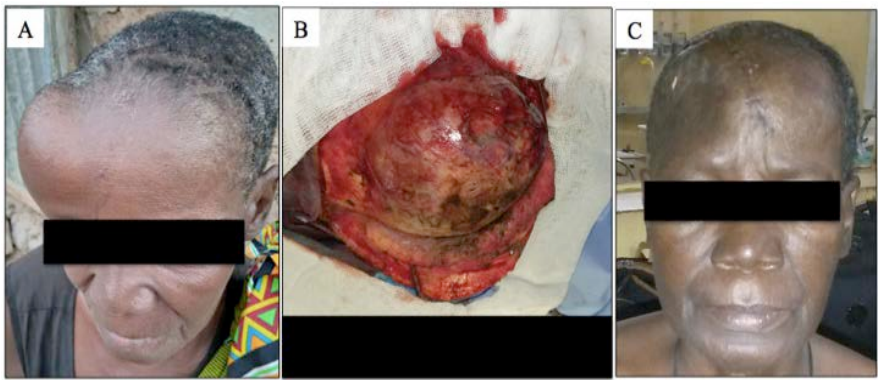

Figure 2. (A) Preoperative picture demonstrating a right frontal process; (B) Intraoperative picture; (C) Postoperative picture showing a removal of the process.

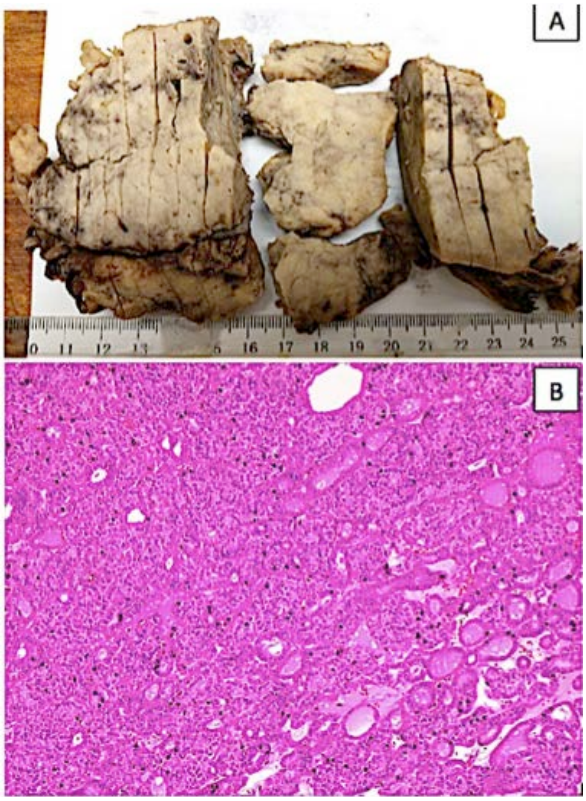

Figure 3. (A) Macroscopic examination: mass (10 × 8 × 3 cm) of rubbery friable consistency; (B) Microscopic examination (HE, G20): carcinomatous proliferation of vesicular architecture. Thyroid-like vesicles contain colloid substances and are lined with moderately atypical epithelial cells.

3. Discussion

Nagamine *et al.* reported the largest series of skull metastasis of thyroid cancer in 1985. He was dealing with 12 cases among 473 thyroid cancers treated during 33 years (From 1950 to 1982). The mean age was 60.4 years with a female predominance, and the incidence of this skull metastasis was only 2.5%. This means that this location is scarce. It appeared as a subcutaneous painless slow-growing lesion located in the occipital or tempo-parietal region [4]. They are commonly hypervascularized, albeit only 50% are pulsatile [3]. In our case, the lesion had the same features apart from its location in the frontal region, the lack of a genuine cutaneous hypervascularisation, and was not pulsatile.

Radiological appearance is commonly a slight hyperdense process with a marked enhancement and overt osteolysis on CT Scan [4]. In general, angiography shows the feeders of the tumor coming from the external carotid artery through the superficial temporal artery, the occipital artery and the middle meningeal artery [3]. Our case demonstrated intradiploic osteolysis, which leads us to a misdiagnosis of either intradiploic aneurysmal cyst, or intradiploic cavernous angioma, or Langerhans cell histiocytosis. All these radiological differential diagnosis lesions are less hemorrhagic than thyroid metastasis.

The purpose of surgery in the management of these lesions is a total removal

of the metastasis and the thyroid. However, only 50% of total metastasectomy is reported in the literature due to the hemorrhagic features [3]. Despite massive bleeding resulting in intraoperative deep hypotension with blood transfusion, we achieved a complete removal of the lesion in our case.

Pathological examination demonstrates on gross examination, a slowly growing mass of variable size that can exceed 20 cm. The mass is often whitish in color, crumbly rubbery in consistency with hemorrhagic changes.

Microscopically it is a carcinomatous proliferation of variable differentiation from tumor to tumor and within the same tumor. In the well-differentiated forms as in our case, we observe a tissue reminiscent of the thyroid parenchyma with vesicles of variable size lined by epithelial cells with moderate atypia.

Our patient was sent to an ENT surgeon and investigations revealed follicular thyroid cancer.

The first line of adjuvant therapy in thyroid cancer and its metastasis remains radioiodine therapy followed by TSH (Thyroid Stimulating Hormone) suppression therapy. This latter consists of thyroid hormone administration [5] [6].

In our case, thyroid hormone suppression therapy was applied but radioiodine therapy was not available in our area. Thyroglobulin is an excellent marker of recurrence during the follow-up period [1]. If it's negative, we must first of all exclude antibodies anti thyroglobulin [1]. The mean survival time is reported to be 3 to 5 years [3] [7]. Follicular thyroid cancer is less frequent than papillary thyroid cancer and accounts for 20% and 70% of thyroid cancers respectively [1]. However, the more frequent histopathological presentation of skull metastasis is follicular thyroid cancer [3]. In fact, papillary tumors have the propensity to invade lymphatics than blood vessels [8], whereas the hematogenous route of spreading is the predilection of follicular tumors [9].

4. Conclusions

Massive intraoperative hemorrhage often precludes a total removal of skull metastasis of thyroid cancer, although a total resection was achieved in our case [4].

The combination of treatment modalities including aggressive surgical management, radioiodine therapy, and levothyroxine suppression therapy is associated with the improvement of overall survival [10]. Thus, the appropriate management of skull metastasis of thyroid cancer requires multidisciplinary teamwork [11].

The main risk factor for thyroid cancers is the past history of neck irradiation during childhood. Metastasis of follicular thyroid cancer must be included in the differential diagnosis of subcutaneous slow-growing lesion of the skull, and the surgeon must be prepared to avoid intraoperative catastrophic hemorrhagic complications.

Informed Consent

Informed consent from the patient was obtained.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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