

Case Report

Synchronous papillary carcinoma of thyroid and mucoepidermoid carcinoma of parotid gland

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Abstract

The presence of multiple malignancies of different histologies occurring synchronously is very rare and is reported in limited numbers across the literature. We hereby report a case presenting with papillary carcinoma of thyroid gland and mucoepidermoid carcinoma of parotid gland accompanied by regional lymph node metastasis of both the aforementioned malignancies. Recognition of such tumors is quintessential as the management and prognosis vary.

Keywords: papillary carcinoma of thyroid, mucoepidermoid carcinoma, synchronous

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INTRODUCTION

A synchronous occurrence of malignancy is considered when multiple primary tumors occur within 6 months of diagnosis of the first malignancy. The ones occurring after a 6-month duration are called metachronous. The occurrence of such malignancies is rare and can have multifactorial etiology. Diagnosing and characterizing such tumors as two different primary malignancies is challenging and necessary as treatment and also prognosis vary.^[1]

CASE REPORT

A 33-year-old female presented with swelling in the right cheek of 3 months duration. On examination, a hard 3 cm mass was felt in the parotid region along with multiple enlarged bilateral cervical lymph nodes along with an incidental swelling approximately 1 cm in the left lobe

of thyroid. CT of the neck showed hypodense nodules in left lobe and isthmus of thyroid (Thyroid Imaging Reporting and Data System category V) along with multiple bilateral centimeter- and subcentimeter-sized lymph nodes suggestive of secondaries.

Fine needle aspiration cytology (FNAC) of parotid favored mucoepidermoid carcinoma (MEC) and the smears from the left cervical lymph node showed metastatic deposits of papillary carcinoma of thyroid (PTC). The patient was planned for a total thyroidectomy, right parotidectomy, left radical neck dissection, right central compartment, and right level 2 lymphadenectomy following negative COVID-19 reverse transcription polymerase chain reaction test result. On gross examination of thyroid, a 2 × 1.5 × 1 cm ill-defined gray white lesion was noted involving the left lobe and isthmus. No extrathyroidal

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extension was noted. Parotid gland on gross examination showed a solid cystic lesion measuring $2.5 \times 2 \times 1.5$ cm. Histopathological examination of thyroid confirmed the diagnosis of PTC—classical variant with the presence of angiolymphatic invasion. Histopathological examination of parotid confirmed an MEC of high grade with the absence of lymphovascular and perineural invasion. Histopathological examination of cervical lymph nodes of left level IIA, III and IV nodes showed metastatic tumor deposits of PTC with no extranodal extension. The right central compartment lymph node showed metastatic tumor deposit of MEC [Figure 1].

Following surgery, the patient received 150 mCi of I-131 for the thyroid area and adjuvant radiotherapy of a total dose of 60 Gy in 30 fractions for the parotid area. The patient is asymptomatic on 20 weeks of follow-up.

DISCUSSION

Malignancies that occur simultaneously or within a 6-month period are classified as synchronous malignancies and those beyond 6 months as metachronous according to the Gluckmann classification.^[2] Radiation, smoking and alcohol

abuse, family history, and environmental factors are some of the multiple risk factors associated with head and neck malignancies.^[3]

Thyroid cancer is the most prevalent endocrine malignancy and has a higher incidence in women, most commonly in the third decade, although older subjects have a significantly more aggressive course.^[4] Synchronous carcinomas of breast, colon, and stomach and non-Hodgkin lymphoma occurring with thyroid carcinomas are reported in the literature. However, extensive search of literature has not revealed any documented reports of synchronous thyroid and salivary gland carcinomas.^[5]

Around 80–85% of salivary gland tumors occur in the parotid gland of which approximately 25% are malignant. The most common malignant salivary gland tumors are MEC and adenoid cystic carcinoma.^[6] The parotid gland, although an uncommon location for metastasis, may be involved by metastatic squamous cell carcinomas of scalp, face, and neck, followed by melanoma and occasionally by metastasis from kidney, prostate, colon, lung, and breast.^[7,8]

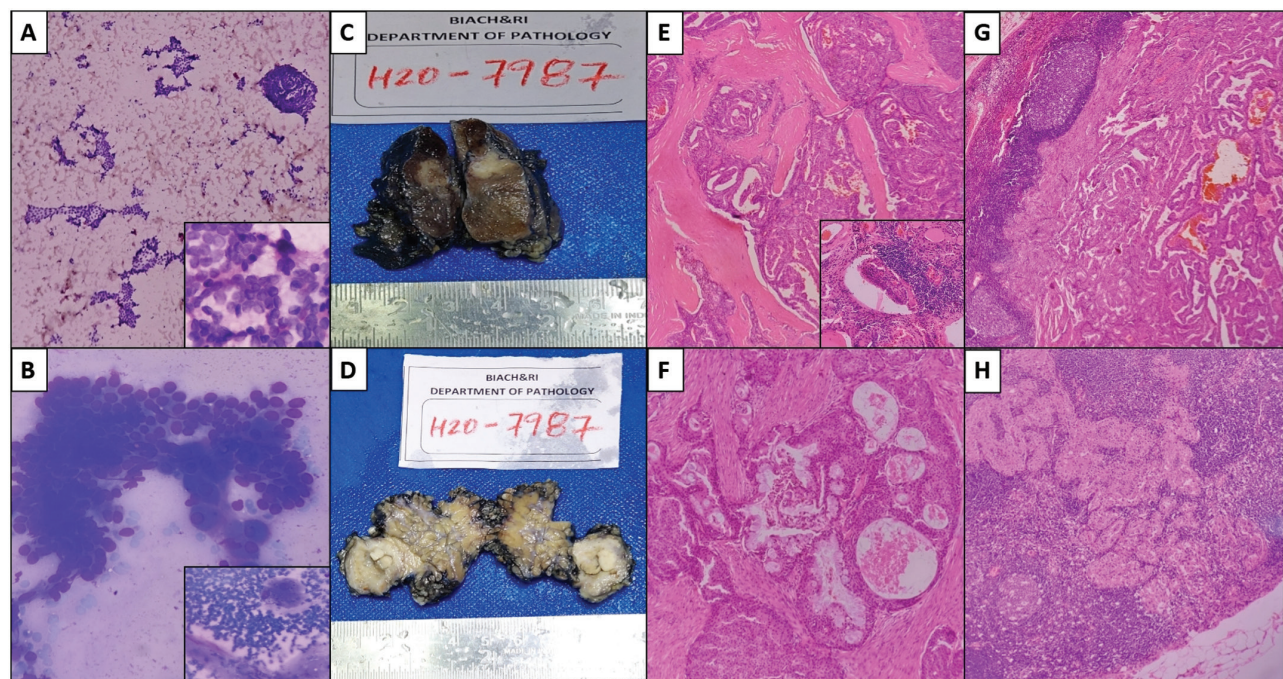


Figure 1: (a) FNAC of the cervical lymph node showed metastasis with features of PTC, which include papillary architecture, nuclear overlapping (MGG, 10 \times), and inclusions and grooves (inset) (MGG, 40 \times). (b) FNAC from the parotid gland showed a hypercellular lesion having round cells with high N:C ratio along with squamoid cells, cyst macrophages, and background mucin (inset) (MGG, 40 \times). (c) Gross photograph of thyroid gland showing an ill-defined gray white lesion. (d) Microphotograph of the PTC gland with angiolymphatic invasion (inset) (H&E, 10 \times). (e) Gross photograph of the parotid gland showing a gray-white solid cystic lesion. (f) Microphotograph of the MEC of high grade in the parotid gland (H&E, 10 \times). (g) Microphotograph of the cervical lymph node showing metastasis of PTC (H&E, 10 \times). (h) Microphotograph of the cervical lymph node showing metastasis of MEC from the parotid gland (H&E, 10 \times). MGG = May Grunwald Giemsa, N:C = nucleocytoplasmic ratio, H&E = Haematoxylin and Eosin

Multiple tumors of different histologies at presentation should be assigned stage as independent tumors and treatment plan should be decided accordingly in order to attain optimal clinical response.^[3]

Metastasis to thyroid and parotid gland from other solid tumors has been reported in the past. This possibility was ruled out in our case.^[5,8]

The molecular analysis of thyroid cancer has shown that the most commonly affected genes involve DNA repair, signal transduction, and cell cycle. BRAF and RAS point mutations and RET/PTC and PAX8/PPAR γ rearrangements are the most frequent alterations in papillary and follicular cancers. TERT and TP53 genes are an important event in thyroid cancer diagnosis or progression.^[9]

The most clinically useful translocation involves MAML2 and CRTC1 or CRTC3 genes, and fluorescence *in situ* hybridization has been proposed as a useful ancillary test in routine diagnosis of salivary gland tumors to confirm MEC.^[10] However, in our case, morphology confirmed the diagnosis and the necessity for molecular analysis was not found.

The treatment modality and prognosis differ for synchronous tumors with different histologies. Although surgery is the common modality for both these tumors, thyroid malignancies receive radioiodine ablation, whereas parotid tumors are invariably given radiation therapy for all potential lymph node metastasis. Neck dissection is done for all suspected cases of PTC, while the same is decided based on histology for parotid tumors.^[11,12]

CONCLUSION

Synchronous occurrence of PTC and MEC of parotid with nodal metastasis has not been documented in the literature. Accurate diagnosis and appropriate management help in better outcome. Genomic profiling of the tumors may

help in both understanding of the molecular underpinning and giving scope for further research and targeted therapy.

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Conflicts of interest

The authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

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