Synchronous Bilateral Tonsil Squamous Cell Carcinoma

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Abstract

Objective: We discuss the treatment and pathology of synchronous bilateral metastatic palatine tonsil carcinoma. The current literature of the diagnosis and management of unknown primary oropharyngeal neoplasms is reviewed including the role of positron emission tomography (PET) imaging.

Study Design: Squamous cell carcinoma (SCCA) of the palatine tonsil typically presents as a unilateral mass in the oropharynx or as a mass in the ipsilateral neck indicating a lymph node involved with metastasis. The carcinoma rarely presents with involvement of the contralateral lymph nodes, and this situation typically is present only in very advanced local disease. Simultaneous discontiguous disease involving both palatine tonsils is exceedingly rare with less than five cases reported in the medical literature.

Methods: Case report and literature review.

Results: This case report involves a 51-year-old male with bilateral palatine tonsil squamous cell carcinoma and bilateral metastatic neck disease. He presented with a left cystic neck mass diagnosed as squamous cell carcinoma by fine needle aspiration. On exam, the site of the primary tumor was suspected to be ipsilateral tonsil. PET scanning demonstrated asymmetric FDG activity in the contralateral palatine tonsil and neck. The patient underwent bilateral transoral robotic-assisted partial oropharyngectomy demonstrating separate unilateral squamous cell carcinomas, both of which were HPV positive. Bilateral neck dissections demonstrated metastatic involvement of one right and two left cervical nodes.

Conclusions: We describe an exceedingly rare case of bilateral synchronous metastatic palatine tonsil SCCA. This finding raises the question regarding the need for bilateral tonsillectomy in the case of the unknown primary or proven tonsil carcinoma with HPV positivity.

Case

- 51-year-old male presented with 2 months history of left neck swelling, no other head and neck complaints
- Nonsmoker, history of psoriatic arthritis, otherwise healthy
- Imaging revealed 2 left cystic neck masses (Figure 1)
- Fine needle aspiration (FNA) revealed squamous cell carcinoma
- No primary site identified on exam or CT
- PET scan obtained revealed hypometabolic activity in the right palatine tonsil and one right-sided FDG avid lymph node, no activity in the left cystic masses (Figure 2)
- FNA performed on right neck node, which was positive for SCCA
- The patient underwent bilateral transoral robotic-assisted partial oropharyngectomy and bilateral select neck dissection followed by chemotherapy and radiation

![FIGURE 1: CT scan demonstrating hypometabolic activity in the left neck. No pathology was appreciated in the contralateral or contralateral neck.](image1)

![FIGURE 2: PET scan demonstrating hypometabolic activity in the right palatine tonsil and one right-sided FDG avid lymph node.](image2)

![FIGURE 3: Left tonsil and lymph node microscopic examination (XG).](image3)

![FIGURE 4: Right tonsil and lymph node microscopic examination (XG).](image4)

![FIGURE 5: DNA in-situ hybridization and positive immunoperoxidase p16+++ staining, left tonsil.](image5)

Pathology

Pathologic examination showed invasive squamous cell carcinomas of the left and right tonsils associated with bilateral metastatic involvement of the cervical lymph nodes. Notable morphologic differences in the squamous cell carcinomas were apparent between the two sides.

Left tonsil: moderately to poorly differentiated non-keratinizing squamous cell carcinoma associated with only a focal desmoplastic stromal reaction (Figure 3).

Right tonsil: invasive moderately to poorly differentiated keratinizing squamous cell carcinoma with marked desmoplasia (Figure 4).

Left neck: 2 of 24 level II neck lymph nodes positive for metastatic non-keratinizing squamous cell carcinoma with partially cystic morphology and no desmoplasia (Figure 3).

Right neck: 1 of 18 level II neck lymph node was almost completely replaced by a solid focus of metastatic keratinizing squamous cell carcinoma with a marked desmoplastic reaction, which was morphologically identical to the carcinoma of the right tonsil (Figure 4). No extranodal extension was identified on either side.

Both tonsillar squamous cell carcinomas were positive for high-risk human papilloma virus subtype, as demonstrated by DNA in-situ hybridization and positive immunoperoxidase p16+++ staining (Figure 5).

![FIGURE 6: Left tonsil and lymph node microscopic examination (XG).](image6)

![FIGURE 7: Right tonsil and lymph node microscopic examination (XG).](image7)

![FIGURE 8: DNA in-situ hybridization and positive immunoperoxidase p16+++ staining, left tonsil.](image8)

Synchronous Tonsil Carcinoma

It is not uncommon for head and neck cancer patients to develop a second primary, and if this is identified simultaneously or within 6 months, it is termed “synchronous.” Synchronous tonsil carcinoma is exceedingly rare with less than five reports in the literature. This may be underrepresented because bilateral neck disease is presumed to be a result of a single advanced tonsil primary. The rate of contralateral lymph node metastasis is significantly increased when the stage of the tonsillar primary is T3 or greater. This suggests that contralateral disease from a T3-2 lesion has greater potential of emanating from a synchronous tumor. Studies show a 5-year survival rate of 8% if therapy had to be changed because of the presence of a synchronous secondary tumor. In contrast, the 5-year survival rate was 20% in patients who did not require a change in therapy because of the simultaneous diagnosis of synchronous tumors.

Unknown Primary

Less than 3% of head and neck squamous cell carcinomas with cervical metastases present with an unknown primary. Work-up typically involves thorough examination, imaging, and biopsies directed at suspected sites. Biopsy yields are generally low, between 2-15% resulting in identification of the primary site. The tongue base, tonsil, and salivary glands are common locations for occult carcinoma. Identification of the primary site has important implications for pursuing further surgery such as bilateral neck dissection or expanded fields of radiotherapy.

Cystic neck metastases are significantly more frequent when the primary resides in the oropharynx. The tonsil is unique in its ability to conceal a carcinoma deep within a crypt or beneath the mucosa, resulting in negative biopsies and sampling error, yet it is amenable to complete resection. Routine tonsillectomy in treatment of unknown primary SCCA is debated in the literature. In studies where tonsillectomy is routinely performed in identification and treatment of unknown primaries, the rates of occult tonsillar SCCA can be as high as 40%.

PET Scan

Imaging can reduce the need for excessive biopsies and prevent subjecting patients to unnecessary tonsillectomies. PET imaging has proven especially useful at identifying the unknown primary sites in the head and neck with success rates as high as 25-73%. There is, however, a false positive rate of 20-46% which may be attributable to inflammation or reactive lymph nodes. Other benefits of PET include staging lymph nodes and detecting distant metastases.

Conclusion

When contralateral neck metastases are identified in a patient with a small primary site, a careful search should be undertaken for a possible synchronous tumor. PET should be considered as part of the diagnostic work-up, as it provides additional and clinically relevant information in the detection of occult primary tumors. Unilateral tonsillectomy should be considered when a cystic neck metastasis is identified in the absence of an obvious primary lesion. Bilateral tonsillectomy also has a role, primarily when bilateral neck disease is identified, as it may be harboring a synchronous carcinoma.

References