REVIEW ARTICLE

Papillary Squamous Cell Carcinoma: A Review


Abstract

Squamous cell carcinoma (SCC) is by far the most common malignancy of the upper aerodigestive tract. Most conventional-type SCCs do not present the surgical pathologist with diagnostic difficulty. Certain variants, however, can histologically mimic benign and other malignant diseases. In such cases, correct diagnosis is important for prognostic and therapeutic reasons. This article discusses the clinicopathologic features of the upper aerodigestive tract variant of SCC, i.e. Papillary Squamous Cell Carcinoma (PSCC). It is a rare variant of SCC having an exophytic papillary component. The article discusses the clinical features, differential diagnoses, immunohistochemical analysis and treatment and prognosis of this lesion.


Keywords: Squamous Cell Carcinoma, Papillary squamous Cell carcinoma, exophytic

Introduction

Squamous cell carcinoma (SCC) is the most common malignancy of the upper aerodigestive tract as a whole and of most individual sites throughout the tract. Most SCCs of the upper aerodigestive tract are conventional-type and as such, show to some degree a recapitulation of stratified squamous epithelium. They are composed of infiltrating nests of atypical squamous cells replete with eosinophilic cytoplasmic keratin formation and intracellular bridges. Central, extracellular keratin is almost always seen.1

This article discusses the clinicopathologic features of the uncommon variant of SCC i.e. Papillary SCC found in the upper aerodigestive tract.

History

Crissman et al were the first one to propose the term papillary carcinoma to this rare variant of SCC.2 This lesion was named Papillary SCC(PSCC) in the current WHO classification and has been described in other parts of the body including skin, uterine, cervix, conjunctiva of the eye and thymus.3 In upper aerodigestive tract, it occurs most frequently in the larynx, but may occur throughout the tract, especially within the sinonasal tract. It is a distinct variant characterized by exophytic and papillary growth with a favorable prognosis.4
Clinical Features

Clinical features of PSCC in general are unknown. It occurs predominantly in men in the 6th and 7th decades and the most common site is the larynx, followed by the oropharynx and nasopharynx.\textsuperscript{5,6} PSCC presents as a soft, friable, polypoid, exophytic, papillary tumor. Clinical presentation is mostly hoarseness.\textsuperscript{7} Tumour size mostly vary from 0.3cm to 6 cm in greatest dimension and the large tumors are mostly associated with vocal cord impairment.\textsuperscript{8}

Pathology

These lesions are defined histologically and have a low-power appearance similar to sinonasal papillomas. Numerous complex papillary and filiform structures extend in all planes, often making the assessment of true tissue invasion somewhat difficult. The papillary fronds are covered with a stratified squamous epithelium that has overt features of malignancy, replete with lack of maturation, increased nuclear/cytoplasmic ratios, nuclear irregularities, and numerous mitotic figures located throughout the entire thickness of the epithelium.\textsuperscript{9} These papillae have thin fibrovascular cores covered by neoplastic, immature basaloid cells or more pleomorphic cells. Commonly, there is minimal keratosis. If no invasion of the atypical epithelium is observed, lesions are called noninvasive PSCC or papillary dysplasia.\textsuperscript{10} In the invasive type PSCC, both typical keratinizing cord-like and nonkeratinizing ribbon-like patterns of the invasive SCC have been found. Invasion may be difficult to define, especially in superficial biopsies. The exophytic pattern consist of a broad-based, bulbous to exophytic growth of the squamous epithelium.\textsuperscript{11} Foci of necrosis and hemorrhage are common. Stroma invasion consists of a single or multiple nests of tumor cells with dense lymphoplasmacytic inflammation at the tumor-stroma interface.\textsuperscript{10}

Differential Diagnosis

The growth pattern of this neoplasm evokes a clinical and histologic differential diagnosis ranging from solitary papilloma to Verrucous carcinoma (VC).\textsuperscript{7} The most common differential diagnosis to be considered with these lesions includes benign papillary lesions, especially sinonasal or Schneiderian papillomas. The degree of epithelial atypia present in these lesions generally should not be seen in other squamous papillary lesions of the upper aerodigestive tract, and the diagnosis usually is not difficult. Occasional sinonasal papillomas or laryngeal papillomas can show inflammation with cytologic atypia or even dysplasia with numerous mitotic figures, however, and methods for definitively distinguishing such lesions from noninvasive papillary carcinomas are lacking histologically. In general, papillary SCC should be a destructive lesion, whereas laryngeal papillomas are not.

VC is another differential diagnosis.\textsuperscript{7} The fronded fibrovascular based epithelial growth pattern as well as the presence of the significant cytologic atypia distinguishes PSCC from the bland cytologic character of VC. VC has a more sessile base with a confluent downward “pushing border” rather than exhibiting features of an infiltrative cell process and is usually associated with a greater degree of hyperkeratosis.\textsuperscript{12}

Immunohistochemistry

It is reported that PSCC has low or moderate grade malignancy. It is presumed that distant metastasis of PSCC is rare and its prognosis is good.\textsuperscript{9} Takeda et al. reported that PSCC had a high Ki-67 labeling index (53.2-59.0%), almost the same as that of SCC (56.7-70.4%). Immunohistochemical assessment of cellular proliferative activity showed a significantly high mean percentage of Ki-67 expression in comparison with verrucous carcinoma, but there was no significant difference of Ki-67 expression among PSCC, conventional squamous cell carcinoma and microinvasive squamous cell carcinoma. These results suggest that the biological behavior of PSCC is analogous to that of SCC.\textsuperscript{6}

Overexpression of p53 protein has been shown by immunohistochemical analysis. Loss Of Heterozygosity studies have shown a similar incidence of genetic abnormalities between these tumors and verrucous carcinoma and well-differentiated conventional type SCC.\textsuperscript{13} It is interesting to note that these tumors showed an increased LOH for a microsatellite marker on the long arm of chromosome 11 compared with other
variants of SCC, although the finding was not statistically significant.\(^{14}\)

**Treatment**

The clinical course of the noninvasive PSCC is not known. Whether this lesion has a high frequency of progression to an invasive neoplasm is unclear. It is currently recommended that papillary dysplasia or noninvasive PSCC be treated by complete surgical excision. The treatment of an invasive PSCC, is based on the stage of the invasive component.\(^{10}\) The cases with laryngeal PSCCs are mostly treated with excisional biopsy, vocal cord stripping and laryngectomy in conjunction with radiation.

**Prognosis**

It is considered that this tumor ia an infiltrative carcinoma and collectively have a better prognosis than conventional SCC of the similar clinical stage but worse than that for verrucous carcinoma.

**Conclusion**

Knowledge of the histologic variants of upper aerodigestive tract SCC is important because it allows pathologists to consider the correct differential diagnoses when atypical lesions are identified.

**References**