Mini Review

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# Accretion and Excrescence-Papilloma Lung

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**ABSTRACT**

**Abbreviations:** HPV: Human Papilloma Virus; PCR: Polymerase Chain Reaction; PET: Positron Emission Tomography; TTF-1: Thyroid Transcription Factor-1

## Mini Review

Papilloma is a benign neoplasm emerging from epithelium layering the respiratory tract. Neoplasm incriminating the respiratory tract commonly arises within large bronchi and is frequently associated with tracheal or laryngeal lesions. Generally, papilloma manifests with distinct histologic subtypes as

- Squamous papilloma
- Glandular papilloma
- Mixed squamous and glandular papilloma.

Additionally designated as squamous cell papilloma or solitary tracheobronchial papilloma, multiple squamous papillomas may be scripted as papillomatosis. Papilloma confined to pulmonary parenchyma is frequently associated with epithelial metamorphosis as dysplasia, carcinoma in situ or invasive squamous cell carcinoma. Solitary endobronchial papilloma is exceptionally encountered in adults and configures below < 0.5% of pulmonary neoplasms. Commonly, squamous papilloma of lung incriminates middle aged subjects. A mild male predominance is observed. Individuals with history of tobacco consumption as cigarette smokers are preponderantly implicated [1,2]. Squamous papilloma of lung appears concurrent with lowrisk variants of human papilloma virus 6 and 11 [HPV 6 and HPV 11] Notwithstanding, high risk variants of human papilloma virus [HPV] are concordant with instances of pulmonary carcinoma [1,2].

Pre-eminently non-invasive, squamous papilloma may exhibit dysplasia, lesion reoccurrence or may progress into squamous cell carcinoma. Lesion is accompanied by nonspecific complaints arising from incrimination of lower respiratory tract as haemoptysis, repetitive bouts of pneumonia, asthma-like symptoms or dry cough. Exceptionally, lesion may incriminate lower bronchial tree and may manifest as an endobronchial, exophytic tumefaction [1,2]. Cytological smears appear moderately cellular and are comprised of singularly dispersed and dis-cohesive clusters of squamous epithelial cells. Constituent epithelial cells may depict intracytoplasmic keratinization and are pervaded with intensely stained, pyknotic nuclei demonstrating variable nuclear atypia. Besides, epithelial cells may appear reminiscent of koilocytes. Cellular component is admixed with an acute inflammatory cell exudate [3,4].

Grossly, a friable, pedunculated or polypoid, smooth to verrucoid, tan to grey/white, wart-like or cauliflower-like tumefaction with glistening surface is encountered. Tumour magnitude is beneath < few centimetres. Upon microscopy, an exophytic, papillary lesion is enun-

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ciated. Papillae are layered with keratinizing or non-keratinizing, mature squamous epithelium and infiltrated by arborizing cores of fibro-vascular tissue. Exceptionally, papillary structures may exhibit an inverted configuration. The expansive lesion may infiltrate adjacent alveolar spaces [3,4]. Alternatively, the cellular lesion may be layered by ciliated or non-ciliated columnar epithelium along with cuboidal epithelial cells or mucin-filled cells, thereby configuring a 'mixed' squamous and glandular papilloma. Lesion may exemplify a viral 'cytopathic' effect with epithelial cells pervaded with enlarged, hyperchromatic nuclei demonstrating nuclear wrinkling. Besides, binucleate cells with cytoplasmic polychromasia and perinuclear haloes may be enunciated. Surrounding stroma delineates mild to moderate infiltrate of inflammatory cells which may engender airway obstruction. Mitotic figures and tumour necrosis are absent [3-7] (Figures 1 & 2; Tables 1 & 2).

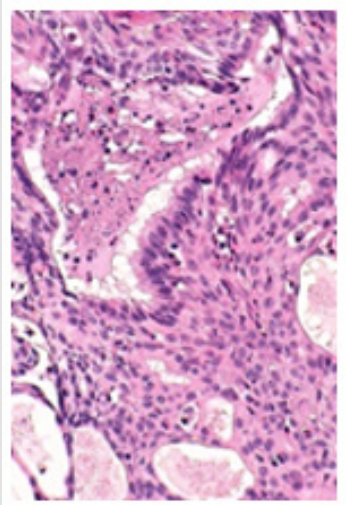

**Figure 1:** Papilloma mixed squamous and glandular comprised of papillary structures lined by stratified squamous epithelium with polygonal cells intermingled with glandular articulations lined by columnar or cuboidal epithelial cells surrounded by a fibrotic, minimally inflamed stroma [6].

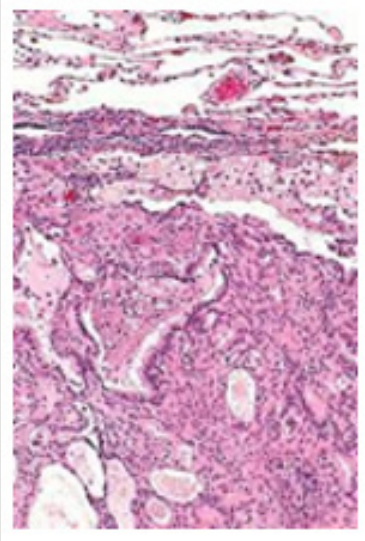

**Figure 2:** Papilloma mixed squamous and glandular constituted of papillary configurations lined by stratified squamous epithelium with polygonal cells commingled with glandular articulations lined by columnar to cuboidal epithelium encompassed by fibrotic, mildly inflamed stroma [7].

**Table 1:** Classification of Lung Tumours World Health Organization 2021 [2].

| **Epithelial Tumours** |
|---|
| Papilloma |
| Squamous cell papilloma NOS |
| Squamous cell papilloma, inverted |
| Glandular papilloma |
| Mixed squamous cell and glandular papilloma |
| Adenoma |
| Sclerosing pneumocytoma |
| Alveolar adenoma |
| Papillary adenoma |
| Bronchiolar adenoma/ciliated muconodular papillary tumour |
| Mucinous cystadenoma |
| Mucous gland adenoma |
| Precursor glandular lesions |
| Atypical adenomatous hyperplasia |
| Adenocarcinoma in situ |
| Adenocarcinoma in situ, non-mucinous |
| tAdenocarcinoma in situ, mucinous |
| Adenocarcinoma |
| Minimally invasive adenocarcinoma |
| Minimally invasive adenocarcinoma, non-mucinous |
| Minimally invasive adenocarcinoma, mucinous |
| Invasive non-mucinous adenocarcinoma |
| Lepidic adenocarcinoma |
| Acinar adenocarcinoma |
| Papillary adenocarcinoma |
| Micro-papillary adenocarcinoma |
| Solid adenocarcinoma |
| Invasive mucinous adenocarcinoma |
| Mixed invasive mucinous and non-mucinous adenocarcinoma |
| Colloid adenocarcinoma |
| Foetal adenocarcinoma |
| Adenocarcinoma, enteric type |
| Adenocarcinoma NOS |
| Squamous precursor lesions |
| Squamous cell carcinoma in situ |
| Mild squamous dysplasia |
| Moderate squamous dysplasia |
| Severe squamous dysplasia |
| Squamous cell carcinoma |
| Squamous cell carcinoma NOS |
| Squamous cell carcinoma, keratinizing |
| Squamous cell carcinoma, nonkeratinizing |
| Basaloid squamous cell carcinoma |
| Lympho-epithelial carcinoma |
| Large cell carcinoma |
| Adenosquamous carcinoma |
| Sarcomatoid carcinoma |
| Pleomorphic carcinoma |
| Giant cell carcinoma |
| Spindle cell carcinoma |
| Pulmonary blastoma |
| Carcinosarcoma |
| Other epithelial tumours |
| NUT carcinoma |
| Thoracic SMARCA4-deficient undifferentiated tumour |
| Salivary gland-type tumours |
| Pleomorphic adenoma |
| Adenoid cystic carcinoma |
| Epithelial-myoepithelial carcinoma |
| Mucoepidermoid carcinoma |
| Hyalinising clear cell carcinoma |
| Myoepithelioma |
| Myoepithelial carcinoma |
| **Neuroendocrine tumours of lung** |
| Precursor lesion |
| Diffuse idiopathic neuroendocrine cell hyperplasia |
| Neuroendocrine tumours |
| Carcinoid tumour NOS/ neuroendocrine tumour NOS |
| Typical carcinoid/neuroendocrine tumour grade I |
| Atypical carcinoid/neuroendocrine tumour grade II |
| Neuroendocrine carcinomas |
| Small cell carcinoma |
| Combined small cell carcinoma |
| Large cell neuroendocrine carcinoma |
| Combined large cell neuroendocrine carcinoma |
| **Tumours of ectopic tissue** |
| Melanoma |
| Meningioma |
| **Mesenchymal tumours specific to the lung** |
| Pulmonary hamartoma |
| Chondroma |
| Diffuse lymphangiomatosis |
| Pleuropulmonary blastoma |
| Intimal sarcoma |
| Congenital peribronchial myofibroblastic tumour |
| Pulmonary myxoid sarcoma with EWSR1-CREB1 fusion |
| PEComatous tumours |
| Lymphangioleiomyomatosis |
| PEComa benign |

| |
|---|
| PEComa malignant |
| **Haematolymphoid tumours** |
| MALT lymphoma |
| Diffuse large B cell lymphoma NOS |
| Lymphomatoid granulomatosis NOS |
| Lymphomatoid granulomatosis, grade I |
| Lymphomatoid granulomatosis, grade II |
| Lymphomatoid granulomatosis, grade III |
| Intravascular large B cell lymphoma |
| Langerhans cell histiocytosis |
| Erdheim-Chester disease |

**Table 2:** Immunohistochemistry of nonsmall cell lung carcinoma [3].

| Immune marker | Squamous cell carcinoma | Adenocarcinoma |
|---|---|---|
| p40 | + | +/- |
| p63 | + | +/- |
| CK5/6 | + | - |
| CK7 | - | + |
| Chromogranin A | - | - |
| Synaptophysin | - | - |
| TTF-1 | - | + |

Note: CK: cytokeratin, TTF-1: thyroid transcription factor-1

Papilloma lung appears immune reactive to squamous epithelial markers as p40 or CK5/6. Besides, lesion appears immune reactive to glandular markers as mucicarmine. Mixed squamous and glandular papilloma appears immune reactive to CK7. Lesion appears immune nonreactive to thyroid transcription factor-1 [TTF-1] and CK20. A subset of neoplasms appearreactive for human papilloma virus [HPV], as discerned by in situ hybridization [ISH] or polymerase chain reaction [PCR] [4,5]. Papilloma emerging within pulmonary parenchyma requires segregation from neoplasms such as inflammatory polyp, mucoepidermoid carcinoma or papillary squamous cell carcinoma [4,5]. Upon frozen section or examination of miniature tissue samples, papilloma lung may be challenging to discern or segregate from squamous epithelial carcinoma. Papilloma lung may be incidentally discovered upon cogent imaging studies. Alternatively, clinical symptoms concurrent with airway obstruction may ensue [4,5].

Plain radiographs may appear unremarkable or exhibit an infiltrative shadow or hilar tumefaction. Besides, lobar collapse may be discerned. Computerized tomography enunciates shadowing of the tumefaction. Upon positron emission tomography [PET] scan, tumour may depict avidity for 18F- fluorodeoxyglucose [18F-FDG] [4,5]. Papilloma arising within pulmonary parenchyma may be appropriately managed with endoscopic eradication of the lesion. Additionally, manoeuvers such as cryotherapy or fulguration may be adopted. Certain lesions may be optimally alleviated by surgical extermination of lesion [4,5].

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6. Image 1 Courtesy: Wikimedia commons.
7. Image 2 Courtesy: Libre Pathology.

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