

CASE REPORT

Bilateral Squamous Cell Carcinoma of the Lung in Association with Recurrent Respiratory Papillomatosis

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Summary

Recurrent respiratory papillomatosis is a benign epithelial neoplasm which most frequently affects larynx and trachea and rarely extends to lung parenchyma. Transformation to malignant tumour is distinctly rare. Here we report a well-documented, morphologically proved and surgically treated case of bilateral pulmonary squamous cell carcinoma in a young adult male with recurrent respiratory papillomatosis. The aim of the report is to heighten the awareness of malignant transformation in such patients.

Key words: respiratory papillomatosis, lung, lung cancer, pulmonary squamous cell carcinoma

AIM OF THE DEMONSTRATION

The aim of this demonstration is to report a rare case of bilateral pulmonary squamous cell carcinoma in a patient with recurrent respiratory papillomatosis in order to increase the awareness about malignant transformation in such cases.

CASE REPORT

A 35-year-old male was referred to the hospital by the family doctor after routine chest roentgenography disclosed nodule of unknown aetiology in his right lung. Previously, lung tuberculosis was considered but *Mycobacterium tuberculosis* was not identified by any laboratory test. Therefore, the patient was referred to thoracic surgeon for the further assessment and treatment strategy as tumour could not be ruled out.

The patient had no complaints. However, the former anamnesis was remarkable for recurrent respiratory papillomatosis that started at two years age and required regular excisions of tracheal papillomas about one to two times in a year. Due to the patient's condition he had tracheostoma inserted at the age of fourteen. The patient denied any oncological or chronic diseases in the family history.

By laboratory investigation, the levels of red blood cells and haemoglobin were slightly decreased, but white blood cell count and C-reactive protein were elevated. The other biochemical parameters (ASAT, ALAT, creatinine, sodium) were within laboratory reference ranges. Fibrobronchoscopy disclosed oedema of tracheal mucosa and slight granulation tissue. By thoracic radiography, a ring-type nodule, measuring 2.5 cm in diameter, was detected in the upper lobe of the right lung. Similar changes were present in the basal part of the left lung. In addition, small infiltrated plaque was found in the 6th segment of the right lung. Resection of the 6th right segment was performed by thoracotomy access. Cytological smear of the operation material showed no malignancy. The resected lung fragment with a white, round nodule measuring 1.6 x 0.8 x 2 cm was submitted to the pathological examination. By histology, the resection margins were composed of lung tissue lacking any disease process. The nodule

represented moderately differentiated squamous cell carcinoma exhibiting lepidic growth pattern (Fig. A). By immunohistochemistry, the pathological tissues expressed cancer markers, including p63, high molecular weight cytokeratin, cytokeratin 5/6 as well as E-cadherin (Fig. B). Thus, squamous lung cancer was diagnosed in accordance with the morphological structure and immunophenotype. The patient was discharged on 14th postoperative day. After two months he was admitted to the hospital repeatedly. Tracheal biopsy displayed papillomatous squamous tissues with mild dysplasia (Fig. C). Second thoracotomy and marginal resection of the left 8th and 9th lung segment was performed, yielding a nodule, measuring 2.2 x 0.7 x 0.5 cm, which showed the same histological features as previously resected tumour from the right lung. The patient was discharged on the 13th postoperative day for the further treatment under supervision of oncologist and thoracic surgeon.

DISCUSSION

Recurrent respiratory papillomatosis (RRP) is a benign papillary epithelial neoplasm of the larynx and trachea which is mostly caused by human papillomaviruses (3,7). It is most commonly observed in children, but can occur also in adults. The clinical presentation is non-specific, ranging from mild symptoms as cough to life-threatening conditions including airway obstruction (5). The treatment for respiratory papillomatosis is difficult because the lesions are recurrent and may require frequent ablations or surgical resections (11). Usually the disease affects larynx. Involvement of the trachea can be observed in about 5% of cases. The disease can transform into squamous cell carcinoma of the airway (4). Less than 1% of patients have extension into the lung parenchyma (4). Pulmonary involvement by RRP is associated with an aggressive clinical course. Squamous papillomas of the lung are an uncommon feature of recurrent respiratory papillomatosis, occurring in less than 1% of cases (2, 9). Several theories are considered to explain downward spread of lesions: contiguous extension of papillomas, diffuse viral contamination of airways, and downward dissemination by small

particles resulting from interventional procedures such as tracheotomy, laryngoscopy or bronchoscopy (1). Malignant transformation of RRP to invasive squamous cell carcinoma is reported up to 14% of cases and is usually associated with irradiation or smoking, but only few cases are reported with spontaneous malignant transformation. These patients characteristically manifested RRP before two and a half years of age (4). Malignant transformation of respiratory papillomatosis is almost impossible to treat with conservative therapy

(6). Notably, risk of malignant transformation is higher in patients negative for human papilloma virus (8, 10). In conclusion, the reported case represents a rare malignant manifestation of respiratory papillomatosis. It is necessary to consider lung cancer development in RRP patients and provide accurate routine examination and surgical treatment of the respiratory tract as there are no convincing novel treatments yet.

Conflict of interest: None

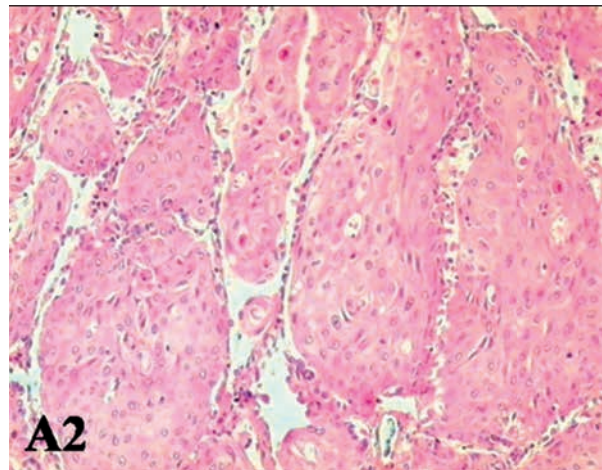
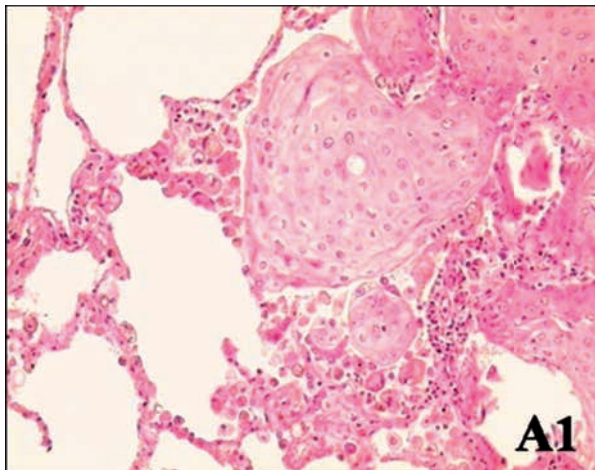


Fig. A. Pulmonary squamous cell carcinoma displaying lepidic growth. A1, Squamous cell carcinoma nests in the alveolar spaces. Haematoxylin-eosin (HE), original magnification (OM) 100x. A2, Overview of the architecture of squamous cell carcinoma. HE, OM 100x.

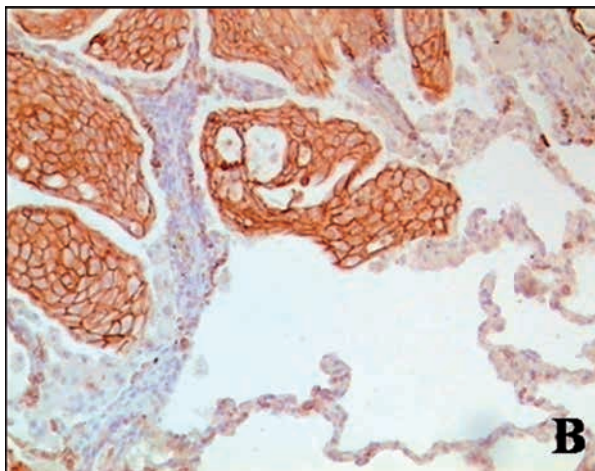


Fig. B. Immunophenotype of squamous cell carcinoma. E-cadherin expression in cancer cells. Immunoperoxidase, anti-E-cadherin, OM 100x.

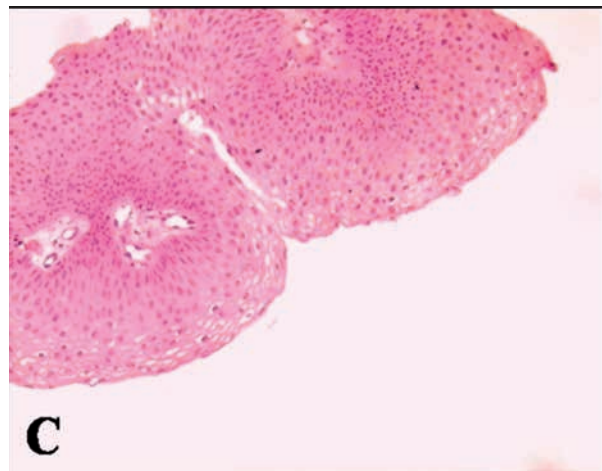


Fig. C. Papillomatous squamous cell fragments with mild dysplasia. HE, OM 100x.

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