Pulmonary atypical carcinoid tumor in a 15-year-old girl: a case report and review of the literature

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Abstract

Primary pulmonary neoplasms in children are very rare, and because of their rarity, delays in diagnosis and treatment are common. Bronchial typical carcinoid accounts for 80% of primary malignant tumors, but, there are less than 40 proven cases in children reported in literature. Atypical carcinoids (AC) are the least common type of pulmonary carcinoids among children and to the best of our knowledge less than 10 cases have been reported in the English literature so far. Herein we present an extremely rare case of AC in a 15-year-old child and review the previously reported and published cases of pulmonary AC in pediatric age group.

Case Report

A 15-year-old healthy girl presented with cough and dyspnea for 3 days duration. Her past medical history showed reactive airway and asthma since last year. Physical examination showed blood pressure: 125/85; pulse rate: 124/min; respiratory rate: 20/min; and temperature: 36.7°C. Heart examination was normal. There were decreased breathing sounds over the left lung. There was no wheezing or rales. Abdominal examination was normal with no organomegaly. Extremities were normal with no clubbing, edema or cyanosis.

Laboratory examination showed leukocytosis (WBC=16.4×10^3/mL), hemoglobin was normal (Hb=12 g/dL) and erythrocyte sedimentation rate was 14.

With the clinical impression of pneumonia, a chest X-ray was performed; it showed lung infiltration and consolidation (Figure 1). Spiral computed tomography scan of the chest showed a small hypodensity in left main bronchus (Figure 2). According to this finding and the patient's vague history of foreign body ingestion, rigid bronchoscopy was performed which showed a small polyp like mucosal projection in left main bronchus, measuring 1×0.5 cm. The mass was excised by bronchoscopy.

The patient had an uneventful postoperative course. The specimen in the pathology department received as a small nodule of about 1 cm with grey color and soft consistency. Microscopic findings showed bland looking epithelial to spindle shaped cells with mild atypia and nesting pattern separated by delicate fibrovascular stroma (Figure 3A,B). The cells were rich in mitosis, i.e. there was 4 mitosis/0 HPF. The cells according to the WHO criteria (2004) the tumor was diagnosed as AC. The patient was scheduled for bronchial sleeve operation, but unfortunately she didn’t accept to perform any additional procedure, but now after about 6 months, she is doing well and symptom free.

Discussion

Pulmonary tumors in children are rare; the most common lesions seen in clinical practice are metastatic disease. Primary lung tumors in pediatric age group are extremely rare, and approximately 75% are malignant. This group consists of carcinoid tumors (40%), bronchogenic carcinoma (17%), and pleuropulmonary blastoma (15%). Bronchial carcinoid accounts for 80-85% of primary malignant tumors. However, there are fewer than 40 proven cases in children in the literature. Among the four types of carcinoid tumors of lung in children, AC are the least common and to the best of our knowledge less than 10 cases have been reported in the English literature. The details of the previous cases have been summarized in Table 1.

The difference in histological criteria between TC and AC were first described by of Arrigoni et al. and later modified by Travis et al. and finally was fixed in 1999 by World Health Organization.
Table 1. Characteristics of the reported cases of pulmonary atypical carcinoid in pediatric population.

| Study (ref) | Age (y) | Presenting symptom | Location | Surgery | Chemoradiation | Outcome |
|------------|---------|---------------------|----------|---------|----------------|---------|
| Bellah et al. (6) | 13 | Cough | Left lung | Left pneumonectomy | + | Metastasis to subcarinal lymphnodes, died in 1 year |
| Lee et al. (7) | 15 | Cough, hemoptysis | Right lung | Right pneumonectomy | - | Symptom free after 1 year |
| Lal et al. (8) | 21 | Cough | Left lung | Left pneumonectomy | + | Symptom free after 18 months |
| Isaka et al. (9) | 19 | Skull bone metastasis | Right lower lobe | No Surgery | + | Died in 1 year |
| Rizzardi et al. (10) | 10 | Cough | Left main bronchus | Sleeve resection | - | Symptom free after 6 months |
| Rizzardi et al. (10) | 15 | Cough | Right lower lobe | Lower lobectomy | - | Symptom free after 6 months |
| Yu et al. (11) | 17 | Cough, fever | Main bronchus | Sleeve resection | - | Symptom free after 134 months |
| Current case | 15 | Cough, dyspnea | Left main bronchus | Polypectomy by bronchoscopy | - | Symptom free after 6 months |

Conclusions

As a conclusion, AC is a rare pulmonary tumor with potential of malignancy. Although AC can very rarely be seen in pediatric population, however it should be kept in mind whenever looking at a mass with carcinoid features in a child.

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