Synchronous Roentgenographically Occult Lung Carcinoma Treated with Argon Plasma Coagulation in a Patient with Resectable Primary Lung Cancer

Departments of 1Internal Medicine, 2Chest Surgery, 3Pathology, 4Diagnostic Radiology, Konyang University College of Medicine, Daejon, Korea

Mi-Hye Kwon, M.D.1, Mi-Il Kang, M.D. 1, Ji-Hyun Jeong, M.D. 1, Hee-Kwan Won, M.D. 1, Hyun-Woong Park, M.D. 1, Jung-Ho Park, M.D. 1, Sung-Tae Kim, M.D. 1, Sun-Jung Kwon, M.D. 1, Eugene Choi, M.D. 1, Moon-Jun Na, M.D. 1, Hyun-Min Cho, M.D. 1, Young-Jin Kim, M.D. 1, Yoon-Mee Kim, M.D. 1, Young-Jun Cho, M.D. 1, Ji-Woong Son, M.D. 1

Key Words: Synchronous Roentgenographically Occult Lung Carcinoma (ROLC), Carcinoma in situ, Argon Plasma Coagulation (APC)

Introduction

The development of the autofluorescence bronchoscopy (AFB) technique in the early 1990s in addition to traditional sputum cytology methods enabled early detection of both bronchial intraepithelial neoplasia and lung cancer in central airways. Even though this advancement allowed for earlier intervention, it unfortunately did not achieve significantly increased survival rates1. Recently the prevalence of synchronous roentgenographically occult lung carcinoma (ROLC) in patients with resectable primary lung cancer was determined to be relatively high, 9.3%, by AFB and biopsy2. Carcinoma in situ (CIS) diseases from the bronchus are known to progress to invasive carcinomas in more than half of the cases, Surgical resection remains the primary curative treatment of lung cancer. However, several endobronchial treatment modalities are available for curative or palliative purpose in inoperable patients.
MH Kwon et al: ROLC treated with argon plasma coagulation

Figure 1. Preoperative images of CT showed (A) about 3.7×2.7 cm sized heterogenous enhancing low density mass with total obstruction of anterior segmental bronchus of right upper lung (solid arrow), (B) proximal portion of right middle and lower bronchus is unremarkable (dashed arrow).

Synchronous second primary lung cancer in non small cell lung cancer (NSCLC), is not a rare phenomenon and current guidelines recommend considering curative surgical resection for both of types of lesions, invasive mediastinal staging and extrathoracic imaging. We report a case of synchronous double primary lung cancers that were treated with lobectomy for lung mass and argon plasma coagulation (APC) for another lesion of CIS.

Case Report

A 68 year-old male patient visited our hospital for evaluation of an incidental right upper lung mass that was found in a chest x-ray performed at a routine check-up. The patient was a current smoker with 15 pack-years of smoking history. In addition, he had been diagnosed with hypertension and diabetes mellitus and was on regular medications. He was free from any respiratory symptoms, and had no systemic complaints such as weight loss, general weakness and decreased appetite. Furthermore, the patient’s physical examination revealed no abnormal findings and his vital sign was stable upon admission. Laboratory findings revealed a white cell count of 9.21×10⁹/L, 17.9 g/dL hemoglobin, 50.7% hematocrit, and platelet count 227×10⁹/L. Routine chemistry and ABGA were also unremarkable. However in the chest x-ray the right hilum was prominent, and the chest dynamic CT showed 3.7×2.7 cm sized heterogeneously enhanced low density mass that completely obstructed the anterior segmental bronchus of the right upper lobe (Figure 1). We performed autofluorescence bronchoscopy (OncoLIFE®, Xillix, British Columbia) and obtained a tissue sample, using forcep biopsy, from the obstructing intraluminal mass in the right upper lobe (Figure 2A) and the superior segment of the right lower lobe where a loss of autofluorescence was observed without mucosal abnormalities (Figure 2B). The pathology reports indicated that the mass in the right upper lung was squamous cell carcinoma and the lesion in the superior segment consisted of squamous cell carcinoma in situ (Figure 3). No distant metastasis was observed in the brain MRI, whole body bone scan, and whole body PET/CT. In the preoperative physiologic evaluation, the patient’s performance was good and the postbronchodilator FEV1 and MVV were 2.39 L (92.2% of pred), and 61.8 L (60.4% of pred), respectively, therefore the right pneumonectomy was planned. During the operation, the right lobectomy and mediastinal lymph node dissection were done because he could not tolerate one-lung ventilation. After 3 weeks, the superior segment of the right lower lung lesion was treated with one session of APC (ERBE®, Elektromedizin Tübingen, Germany) and no immediate complication was encountered (Figure 2C, D). On the 18th day post-APC, an ulcerative lesion with mild edema was observed by bronchoscopy (Figure 2E), and the biopsy report revealed acute and chronic inflammation. He was discharged uneventfully and there was no evidence...