
Treatment of endoluminal typical carcinoid tumor with bronchoscopic techniques

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ÖZET

Endoluminal tipik karsinoid tümörün bronkoskopik yöntemlerle tedavisi

Tipik bronşiyal karsinoid tümörlerde cerrahi tedavi bronkoskopik rezeksiyondan majör rezektif prosedürlere kadar değişir. Kliniğimize hemoptizi ve dispne şikayetleri ile başvuran 29 yaşındaki erkek hastada tipik karsinoid tümör saptandı. Olgu argon plazma koagülasyon ve sonrasında rezeksiyon uygulanarak bronkoskopik yöntemlerle tedavi edildi. Bronkoskopik basit eksizyonun, polipoid tipte lezyonu olan tipik bronşiyal karsinoid tümörlerin tedavisinde uygun seçilmiş olgularda güvenli ve etkili bir prosedür olduğu unutulmamalıdır.

Anahtar Kelimeler: Bronkoskopi, polipoid, tipik karsinoid tümör.

SUMMARY

Treatment of endoluminal typical carcinoid tumor with bronchoscopic techniques

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Surgical treatment of typical bronchial carcinoid tumors varies from bronchoscopic excision to major resective procedures. Typical carcinoid tumor was detected in 29 year old man patient who were admitted to our clinic with hemoptysis and dyspnea. Typical carcinoid tumor was treated with exsicion after argon plasma coagulation by bronchoscopic techniques. It should not be forgotten that bronchoscopic approach and simple excision is an effective and safe procedure for the treatment of typical bronchial carcinoid tumors in selected cases like polypoid type lesions.

Key Words: Bronchoscopy polypoid, typical carcinoid tumor.

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Bronchial carcinoids are tumors of low-grade malignancy. They account for 1-5% of all bronchopulmonary tumors. Typical carcinoids involve well differentiation, rare mitosis, pleomorphism and necrosis and present a less aggressive progress. While 90% of the carcinoids are typical, 10% comprises of atypical carcinoids characterized by histologically increased mitotic activity, nuclear polymorphism and disorganization (1-4).

While bronchoscopy had been considered the sole option in surgical treatment until recently, various authors have reported the use of different technologies such as ND-YAG laser in as a supplement to bronchoscopy (5,6). Most recently, cryotherapy was demonstrated to be a safe and effective method as an adjunction to endobronchial mechanic resection of the typical carcinoids (7). The argon plasma thermo-coagulation method is an effective method in the resection of intraluminal obstructive lesions of the central airway (APC 300; ERBE; Germany) (8,9). Initial bronchoscopic treatment was reported to be a more tissue-protective method as an alternative to emergency surgical resection in bronchial carcinoids (10).

In a typical carcinoid case which presented itself as an endobronchial polypoid, we resected the mass by using a bronchoscopic electro-surgical snare; removed the fragments by means of cryotherapy and applied argon plasma thermoregulation to the tissue at the base. Our objective was to report the safety of the argon plasma thermoregulation method in the treatment of typical bronchial carcinoid, as an adjunct to endoscopic excision, through a case.

CASE REPORT

When a 29-year-old man case who was employed as a worker in the textile sector referred to our outpatient clinic with an increase in his hemoptoic expectoration, coughing and dyspnea complaints which had been present for a period of one year, he was admitted in our department for examination. He had a history of pneumonia at the age of five-six and one year ago. He had a smoking habit for 10 plus years. During the physical examination, no characteristics were noted in the lung auscultation, except relatively reduced breath sounds at the right base in com-

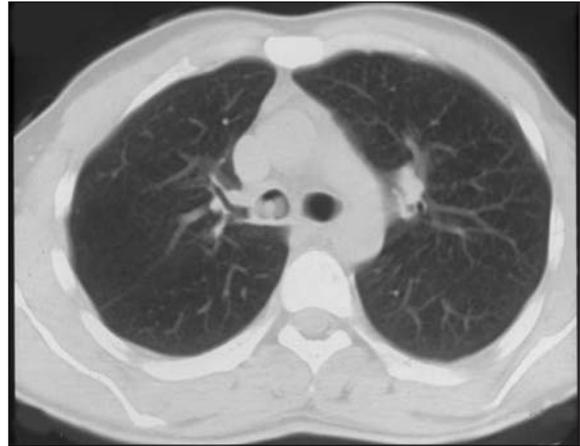


Figure 1. CT scan showed nodular opacity in the right main bronchus with pleural thickening accompanied by calcification in the lower zones of the right hemithorax posterior which is more significant on the costal surface.



Figure 2. Excision process with snare.



Figure 3. Lesion had completely disappeared and the mucosa had been totally healed.

parison to the left. In the chest radiography, the right sinus was collapsed and parenchymal opacity was noted in the lower zone. Computed tomography (CT) scan showed nodular opacity in the right main bronchus with pleural thickening accompanied by calcification in the lower zones of the right hemithorax posterior which is more significant on the costal surface (Figure 1). Biochemical tests and hemogram did not reveal any pathological findings. Spirometer measurements were 3.77 L (69%) for FVC, 60% for FEV₁ and 72.9% for FEV₁/FVC. A bilobulated polypoid mass in the right main bronchus was noted in the fiber-optic bronchoscopy. On passing to the superior aspect of the mass using a bronchoscope, it was noted to be originating from the posterior segment of the upper lobe (Figure 2). Biopsy was not taken and resection of the polypoid mass under operating-room conditions was decided. A pre-anesthetic consultation was conducted. The informed consent of the patient was obtained. Fiber-optic video-bronchoscopy under general anesthesia was performed on the patient under operating room conditions. The lobulated mass in the right main bronchus was excised in two stages using an electro-surgical snare (electrocauter) and the fragments were removed by means of a cryoprobe (ERBE device). The mass was noted to be originating from the posterior wall and the base of the mass was coagulated by means of argon plasma. In the pathologic evaluation, the excised dark colored, lobulated glistening mass was diagnosed as typical carcinoid tumor abdominal ultrasonography and brain CT was performed on our case. Furthermore, his 5-OH indoleacetic acid evaluation was normal. In the post-operative spirometer measurements, FVC was 3.87 (77%), FEV₁ was 3.51 (80%) and FEV₁/FVC was 78%. In the bronchoscopy performed six months after the process, it was noted that the lesion had completely disappeared and the mucosa had been totally healed (Figure 3). The case was discharged for follow up after being scheduled for a second fiber optic bronchoscopy six months later.

DISCUSSION

Typical pulmonary carcinoid tumors progress less aggressively and limited bronchoscopic surgery is recommended for treatment (7,11,12).

Five years survival rates following bronchoscopy surgery is over 80% (13,14). Since the endoluminal typical carcinoids are centrally localized and present a lower level of lymph node invasion and far metastasis, it has been demonstrated that they are easy to control through bronchoscopic resection (15). These carcinoids are suitable for bronchoscopic resection since they generally involve the large airways and present polypoidal growth. Removal of the tumor is not sufficient. Since the infiltration of the bronchial wall tends to increase recurrence, the treatment of the base where the tumor was removed from is also imperative. Surgical destruction methods which could also be performed bronchoscopically such as laser, cryotherapy and electrocautery allow for the mechanical removal of the tumor.

Tumor cells are cryosensitive and cryotherapy leads to tumor tissue necrosis. Electrocautery is a traditional method used in mechanical resection. The argon plasma coagulation method on the other hand, has a cytotoxic effect. In short, while the endobronchial treatment methods are effective in the mechanical removal of surface tumors, they also lead to tissue necrosis (i.e. to the death of tumor cells) in depths of several millimeters (16).

All the three endobronchial treatment methods were employed jointly in our case with typical carcinoid. In the first stage of our process, the polypoidal mass was resected in two steps using an electro-surgical snare and hemostasis was performed. In the second stage, the detached fragments were removed with a cryoprobe. Subsequent to the removal of the polypoidal mass, the residual tissue left on the base was treated with argon plasma laser thermo-coagulation method. Thus, both the mass was removed mechanically, and (through cryotherapy and argon plasma technique) it was intended to ensure the necrosis of the invasive tumor cells to a depth of several millimeters. Hence, we performed these procedures based on the statements in the literature on the bronchoscopic treatment of bronchial carcinoids.

Employing Nd-YAG laser therapy on one case with typical carcinoid, mechanical tumor excision on four cases and surgical treatment on six cases, Sutedja et al. reported a median follow-

up time of 47 months without recurrence in patients with bronchial treatment (17). Van Boxem et al. reported a recurrence period of 29 months for cases treated with Nd-YAG laser, photodynamic therapy and brachytherapy; while reporting 34 months for cases treated with surgery (18). Performing laser therapy and mechanical excision to 38 cases with bronchial carcinoid, when Cavaliere et al. chose three of those patients for open surgery; they did not come across any residual tumors in their surgical specimens (19). After a median follow-up of 55 months on 18 cases on which cryotherapy was performed at the implantation base of the tumor subsequent to bronchoscopic resection, Bertolotti et al. reported a single recurrence seven years after the initial bronchoscopic treatment (7).

Actually, there are success reports on use of cryotherapy and Nd-YAG laser in the treatment of bronchial carcinoids. The relatively new laser technique of argon plasma is successfully performed on endobronchial tumors. In fact, the endoscopy performed three months later on our case demonstrated that there has been no formation.

In conclusion, in the treatment of typical endobronchial carcinoid tumors with no lymph node invasion or metastasis, employment of cryotherapy and argon plasma coagulation subsequent to an initial use of electrocautery resection is a reliable and a tissue-protective method. The patients should be carefully followed-up for a possible recurrence. Compared to bronchoscopic treatment, the literature does not report any significant superiority in favor of surgical treatment in terms of recurrence.

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