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patients suffering from multiple lung cancers has increased. We describe a patient with three simultaneous lung cancers composed of adenosquamous carcinoma, adenocarcinoma, and squamous cell carcinoma, which was successfully treated with neoadjuvant chemotherapy.

**Case Report**

A 63-year-old, apparently healthy man who had a routine medical checkup in October 1989 showed a rise in carcinoembryonic antigen (CEA) level. Chest radiograph then revealed a mass in the right lung. He was admitted to the hospital for further study free of symptoms in March 1990. His family history was positive for lung cancer in his brother. He had an 80-pack-year history of cigarette smoking. Results of physical examination were within normal limits. Laboratory data were noncontributory except for the CEA value, which was 18.1 ng/ml. At hospital admission, besides the known mass in the right lower lobe that measured 60 mm in diameter, a second mass 20 mm in diameter was detected in the left lower lobe. Flexible fiberoptic bronchoscopy with brushing cytologic studies revealed squamous cell carcinoma in both the larger tumor in the right lower lobe and the smaller tumor in the left lower lobe. Neoadjuvant treatment prior to surgery was performed. Three courses of chemotherapy were administered consisting of cisplatin, 100 mg/m2; etoposide, 240 mg/m2; and vindesine, 4 mg/m2. Chest computed tomography then confirmed an 80 percent reduction of the right mass (partial response) with a disappearance of the left mass (complete response). His serum CEA fell to 5.3 ng/ml. On July 13, the patient underwent right lower lobectomy with hilar and mediastinal lymphadenectomy. There was no evidence of mediastinal lymph node metastasis. The histologic report revealed adenosquamous carcinoma composed of a tubular adenocarcinoma and a low-differentiated squamous carcinoma being predominant, only part of which consisted of degenerated cancer cells following preoperative chemotherapy. The patient's postoperative course was uneventful. He refused any further surgical intervention in the left lung. When he was discharged from the hospital on August 21, his serum CEA level was 3.4 ng/ml. One and a half months after hospital discharge, he agreed to an operation when the follow-up examination showed enlargement of a left mass, in spite of serum CEA level remaining low at 3.7 ng/ml. On October 12, a left thoracotomy was performed and revealed in addition to the known tumor in S8 measuring 12 mm in diameter, another tiny, hard separate mass just under the pleura. A frozen section of the latter revealed an adenocarcinoma. A partial resection of the left lower lobe, including the two masses, and hilar lymphadenectomy were carried out. Microscopic examination demonstrated that the mass recognized preoperatively was a moderately differentiated squamous cell carcinoma with a slight degeneration of the cancer cells resulting from preoperative chemotherapy. The tiny mass that was found accidentally was a papillary adenocarcinoma that showed no effects of the therapy. The surgical margins and hilar lymph nodes were free of disease. The patient's postoperative course was uneventful. He left the hospital on November 10 with a serum CEA level of 3.7 ng/ml. He continues to do well, without recurrence more than 2 years after the final operation.

**Discussion**

This case raises three questions. First, did the three cancers have an independent origin? Second, did the effects of chemotherapy differ on the adenocarcinoma and the squamous cell carcinoma? Finally, how should one manage multiple malignant tumors?

Adenosquamous carcinoma was found in the patient's right lower lobe, while an adenocarcinoma and a squamous cell carcinoma were recognized separately in his left lower lobe. We questioned whether these tumors represented new primary or metastatic lesions. The criteria for the diagnosis of multiple

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Simultaneous Occurrence of Three Primary Lung Cancers*

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We present a patient with three lung cancers composed of adenosquamous carcinoma, adenocarcinoma, and squamous cell carcinoma. Marked response was obtained in squamous cell carcinoma components following chemotherapy, but not in adenocarcinoma components. Even multiple malignant lesions of the lung might have a chance to be controlled by a combination of chemotherapy and surgery. (*Chest* 1994; 105: 631-32)

CEA = carcinoembryonic antigen

In recent years, as a result of improvement in the diagnosis and the therapy for primary lung cancer, the number of

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lung cancer proposed by Martini and Melamed,
and better neoadjuvant of pponent, carcinoma demonstrated systemic left histologic lesions were clearly not metastatic because a tubular type was found in the right lung and a papillary type was detected in the left lung. The origin of the squamous cell carcinoma lesions is less defined, but it should be considered as a separate primary cancer owing to the absence of both nodal involvement and systemic metastases.

This patient had received preoperative cisplatin, etoposide, and vindesine. Histologic evaluation of the resected specimens demonstrated a response of only the squamous component on adenosquamous carcinoma in the right and the squamous cell carcinoma in the left, whereas there was no response of the adenocarcinoma. Interestingly, the effects of chemotherapy were observed mainly on the squamous cell carcinoma component, which is a usual pattern. The serum CEA level returned to normal not after surgery but following the induction of chemotherapy, and in this case appeared to reflect the activity of the squamous cell carcinoma, which is an unusual pattern.

Ferguson et al. reported that median survival was 25 months for patients with stage I synchronous cancers, and 11 months with stage II or III. Their results following resection were markedly poor. Surgery alone is not enough to control multiple cancers such as the present case. We considered that neoadjuvant treatment prior to surgery might produce even better prognosis for this patient, which was already beyond our expectations at this point of over 2 years postoperatively. We emphasize the importance of the combined use of surgery and chemotherapy. In retrospect, we place a high value on the treatment of this patient. A good prognosis might be expected, because a macroscopically complete resection of the three tumors was accomplished and precautionary resection of appropriate nodes was proved to be negative. Therefore, it is very important not to be discouraged at the finding of such multiple lesions and to increase the chance of a cure by using the maximal combination therapy. This patient's favorable response to surgical intervention verifies that we should not abandon hope, even when treating multiple malignant lesions of the lung.

References


Diagnosis of Coronary Artery Atheroembolism by Right Ventricular Endomyocardial Biopsy*

Phillip J. Harrity, M.D.; Henry D. Tazelaar, M.D., F.C.C.P.; Brooks S. Edwards, M.D.; and Richard J. Rodeheffer, M.D.

A case of coronary artery atheroembolism in a 54-year-old man, presenting as worsening congestive heart failure 2 months after mitral valve repair, left ventricular aneurysmectomy, and coronary artery bypass grafting, is reported. The diagnosis was made by right ventricular endomyocardial biopsy. The authors believe this to be the first such account in the literature.

(Chest 1994; 105: 632-34)

Coronary artery embolism is a well-recognized phenomenon, with the first account generally attributed to an address by Virchow in 1856. Commonly thought to be rare, coronary artery embolism was found in 13 percent of patients dying of myocardial infarction in the most recent comprehensive autopsy study by Prizel et al. In the preantibiotic era, the most common causes of coronary artery embolism were infective endocarditis, left atrial or left ventricular thrombi, and syphilitic aortitis. In the more current study by Prizel et al, however, nonbacterial thrombotic endocarditis, prosthetic valve thrombi, and thromboembolism associated with cardiac catheterization were the most common causes, with premortem diagnosis occurring in only 27 percent of patients. A recent review of coronary artery embolism also emphasizes the increasing recognition of embolism associated with interventional cardiac procedures, and the practical importance of such recognition in preventing myocardial damage. In a recent report by Yutani et al, 28 cases of coronary artery embolism associated with interventional procedures were found in a retrospective autopsy review; 64 percent of the cases had myocardial infarcts, and 61 percent of the infarcts directly caused death. In only 33 percent of the cases was an antemortem diagnosis of coronary artery embolism made.

It is clear, then, that coronary embolism is not uncommon, and is being seen with increasing frequency in association with interventional procedures; it is also clear that an antemortem diagnosis is made in fewer than one third of cases. Clinical manifestations of coronary embolism include chest pain, shock, arrhythmias, and congestive heart failure. Successful emergent treatment of coronary embolism with Fogarty catheter embolectomy and coronary artery bypass grafting has been demonstrated in four cases clinically recognized at the time of angiography (three cases) or surgery (one case). Early recognition can, therefore, be potentially life-saving as well as myocardium-saving.

We report a case of coronary artery atheroembolism presenting as worsening congestive heart failure in a patient who 2 months previously had undergone mitral valve surgery, left ventricular aneurysmectomy, and coronary artery bypass grafting.

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