

# Management of Multiple Mediastinal Lymph Node Metastasis in Synchronic Colorectal and Lung Carcinomas

## Senkron Kolorektal Karsinom ve Akciğer Karsinomunda Multiple Mediastinal Lenf Nodu Metastazının Yönetimi

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### Abstract

Metastasis of colorectal carcinomas to mediastinal lymph nodes is extremely rare. In this study, it is aimed to share our approach to mediastinal lymph nodes for treating colorectal carcinoma and lung carcinoma detected synchronously. Extended right hemicolectomy was performed when ileus was detected in the patient who presented to the emergency department with the complaint of abdominal pain. The pathological result was reported as signet ring cell carcinoma. The mass in the lung covered >80% of the right lower lobe. Right lower lobectomy and mediastinal lymph node dissection were performed. The pathological result was reported as large cell lung carcinoma. Colorectal carcinoma metastases were detected in subpleural tumor-like foci and mediastinal lymph nodes. There is no consensus on the treatment strategies for such cases. We believe that performing routine mediastinal lymph node dissection is important for determining prognosis and postoperative treatment strategies.

**Keywords:** Colon cancer, lung cancer, mediastinal lymph node metastasis, thoracic surgery

### Öz

Kolorektal karsinomların mediastinal lenf nodlarına metastazı oldukça nadirdir. Bu olgu ile senkron olarak saptanan kolorektal karsinom ve akciğer karsinomunun tedavisinde mediastinal lenf nodlarına yaklaşımımızı paylaşmak istedik. Karın ağrısı şikayetiyle acil servise başvuran hastada ileus saptanması üzerine genişletilmiş sağ hemikolektomi gerçekleştirildi. Patoloji sonucu taşlı yüzük hücreli karsinom olarak raporlandı. Akciğerdeki kitle sağ alt lobun %80'inden fazlasını kaplamaktaydı. Hastaya sağ alt lobektomi ve mediastinal lenf nodu diseksiyonu gerçekleştirildi. Patoloji sonucu büyük hücreli akciğer karsinomu olarak raporlandı. Subplevral tümör benzeri odaklarda ve mediastinal lenf nodlarında ise kolorektal karsinom metastazı saptandı. Bu vakaların tedavi stratejileri hakkında genel bir görüş birliği sağlanamamıştır. Prognoz tayininde ve postoperatif tedavi stratejilerinin belirlenmesinde rutin mediastinal lenf nodu diseksiyonun gerçekleştirilmesinin önemli olduğunu düşünüyoruz.

**Anahtar kelimeler:** Akciğer kanseri, kolon kanseri, mediastinal lenf nodu metastazı

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## Introduction

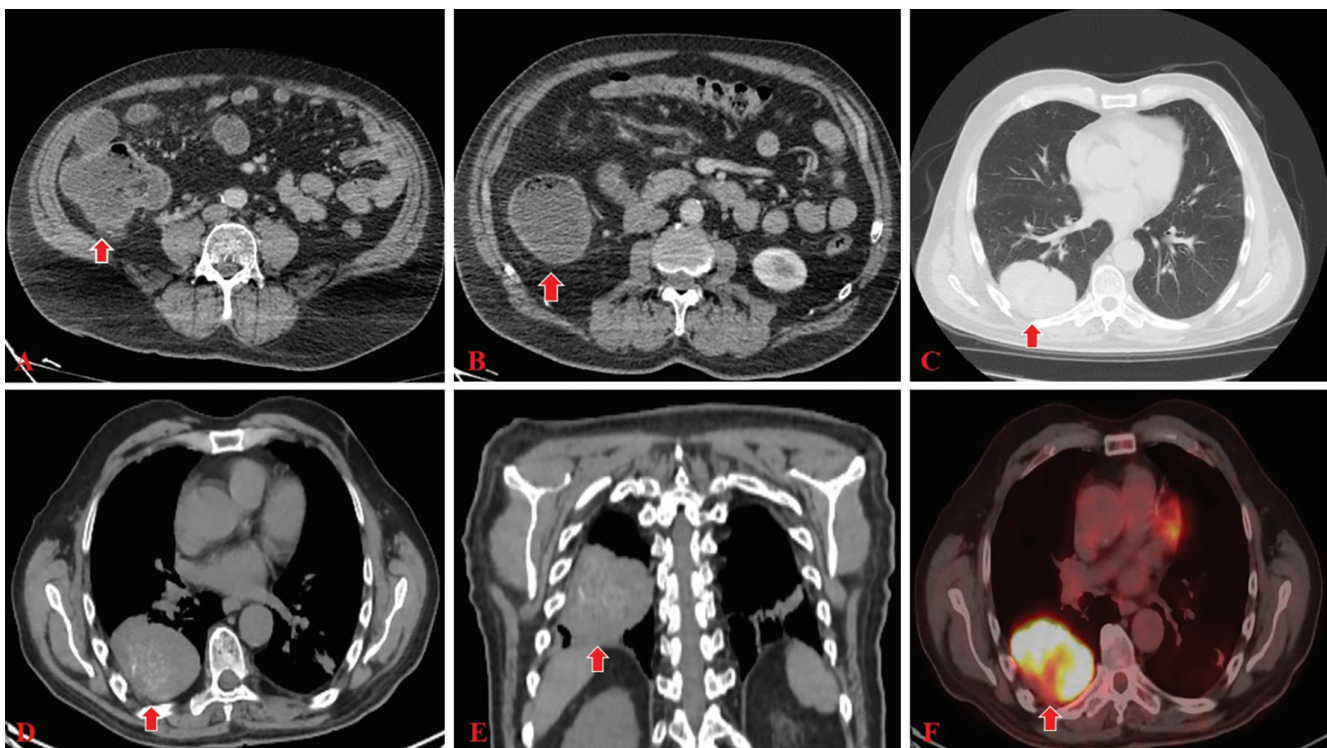
Colorectal cancers (CRC) are one of the most common malignancies seen in developed countries (1). CRC most commonly metastasizes to the regional lymph nodes, liver, bone, lung, and brain. Metastasis of CRC in isolated mediastinal lymph nodes are very rare. When the literature is reviewed, it is seen that there are only a few case reports (2). In this study, it is aimed to report the management of a patient with colon carcinoma with isolated multiple mediastinal lymph node metastases by thoracic surgeons.

## Case Report

A 61-year-old male patient presented to the emergency department with abdominal pain. Abdominal computed tomography (CT) revealed dilatation (ileus) in the small bowel loops (Figure 1A, B). General surgeons performed extended right hemicolectomy. On abdominal CT, a diameter of approximately 8x5.5 cm (cm) was also observed in the lower lobe of the right lung in the upper sections (Figure 1C). Postoperative positron emission tomography/CT was performed. In the lower lobe of the right lung,

there was a mass of approximately 80x55x85 mm. The maximum uptake ( $SUV_{max}$ ) of the mass, standardized with 18-fluorodeoxyglucose (18-FDG), was 16.8 (Figure 1D-F). Low levels of relatively increased 18-FDG uptake were observed in the right lower paratracheal, subcarinal, and right hilar lymph nodes in the mediastinum ( $SUV_{max}$ : 2). Transthoracic biopsy was performed for the mass in the lower lobe of the right lung. In the pathology report, it was not possible to distinguish whether the lung mass was primary lung cancer or colon carcinoma metastasis. The colon surgery pathology result was reported as signet ring cell carcinoma (Figure 2A-C).

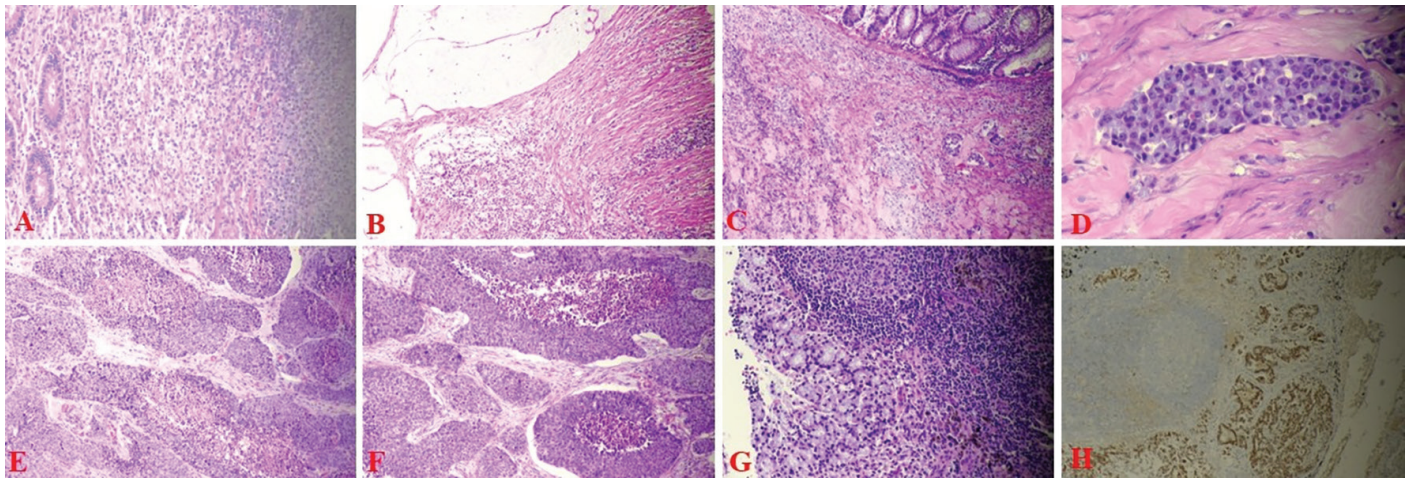
In the intraoperative evaluation, it was observed that the mass occupied more than 80% of the lower lobe of the right lung. Therefore, we preferred right lower lobectomy rather than wedge resection for metastasectomy. Because the diagnosis of metastasis was not certain, we performed mediastinal lymph node dissection. The postoperative pathology was reported as large cell lung carcinoma (Figure 2D-E, Figure 3). Signet ring cells and poorly differentiated adenocarcinoma metastases in the colon were detected in



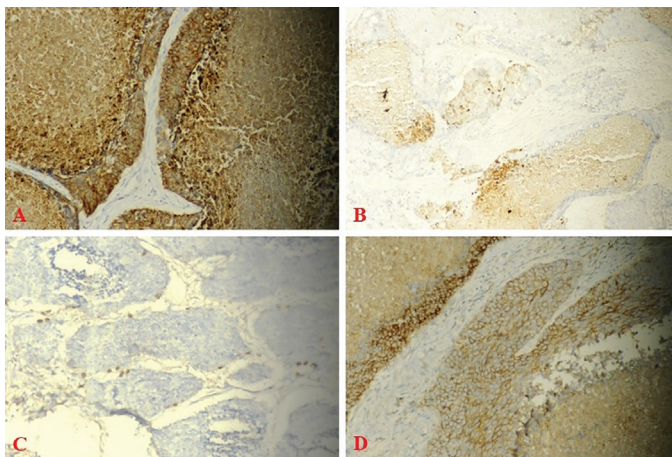
**Figure 1.** A, B) A 10-cm-long, 4.5-cm-thick mass lesion consistent with a malignant process starting from the 2<sup>nd</sup> stanza of the duodenum and extending proximally to the 3<sup>rd</sup> part, significantly narrowing the lumen, C) 8x5.5 cm (cm) mass located in the lower lobe of the right lung on the upper sections of the abdominal CT, D, E) On PET/CT showed a mass lesion in the posterior lower lobe of the right lung approximately 80x55x85 mm in size with soft tissue density, pleural-based lobule contour, containing calcifications accompanied by ground glass densities around it, F)  $SUV_{max}$  uptake of lung mass on PET/CT (16.8)

PET/CT: Positron emission tomography/computed tomography





**Figure 2.** A) Right hemicolectomy material, signet ring cell carcinoma, tumor size 4.5 cm (HE x200), B) Extracellular mucin areas accompanying the tumor (HE x100), C) Signet ring cells observed beneath the villi (HE x100) D) Vascular invasion of a tumor in the colon (HE x400), E, F) Tumor in the lung with necrotic tumor islands in the center (9x8.5x4 cm) (HE x100), G) Mediastinal lymph node with signet ring cells (HE x200) H) Mediastinal lymph node, positive immune reaction with CDx2 (x100)



**Figure 3.** A) Positive immune reaction with Cam5.2 (x200), B) Positive immune reaction with Ck7 (x100) C) Positive immune reaction with Ck7 (x200), D) Positive immune reaction with CD56 (x200)

subpleural tumor-like foci in the lower lobe. It was reported as poorly differentiated colon adenocarcinoma metastases in the mediastinal lymph nodes (Figure 2F-G). Metastasis of lung malignancy was not observed in the mediastinal lymph nodes.

The mass in the lung was accepted as T4N0M0. The mass in the colon was accepted as T4N2M1. The patient was scheduled for chemotherapy every 2 weeks for 8 months and 3 weeks of radiotherapy at the end of chemotherapy. The patient had an acute pancreatitis attack after the fifth radiotherapy session. He was followed up in the intensive care unit. He died on the third day of hospitalization in the intensive care unit because of sepsis.

## Discussion

Metastases of CRC usually spread via the portal venous system to local or regional lymph nodes or the liver. Metastases may initially occur as pulmonary metastases (3). Metastasis from CRC to the mediastinal lymph nodes are very rare. It has been reported in the literature only as a case report. Metastases of CRC to the mediastinal lymph nodes are thought to spread via the lymphatic drainage pathways of the liver in patients with liver metastases and via the paravertebral/paraaortic lymphatic plexus in patients with abdominal or pelvic extension (2). Our patient did not have liver metastases, but there was colon carcinoma metastasis in tumor-like foci in the subpleural region of the right lower lobe. We believe that the spread in the mediastinal lymph nodes may have originated in similar ways without intra-abdominal spread or from pulmonary metastases.

In a study investigating survival after resection of lung metastases in patients with CRC, 25 studies involving at least 40 patients were evaluated. A total of 2.925 patients were analyzed. Poor prognostic factors included short disease-free survival, multiple lung metastases, positive hilar or mediastinal lymph nodes, and a high pre-thoracotomy carcinoembryonic antibody level (4). Because our patient had both hilar and mediastinal lymph node metastases, we predicted poor survival.

The approach to mediastinal lymph node metastases in patients with lung metastases in CRC remains uncertain. The necessity of mediastinal lymph node dissection remains controversial. The general approach is that

systematic hilar and mediastinal lymph node dissection should not be routinely performed in metastasis surgery (5). In our case, it was preferred to perform mediastinal lymph node dissection even though  $SUV_{max}$  values were below 2.5 because it was not possible to distinguish whether the lung mass was primary lung cancer or colon carcinoma metastasis. Thanks to the lymph node dissection performed, the TNM stage of the mass in the colon and lung changed. The change in the staging of the masses supports our prediction that the prognosis will be poor because of the involvement of hilar and mediastinal lymph nodes.

## Conclusion

Metastasis of CRC in mediastinal lymph nodes are extremely rare. There is no consensus on the treatment strategies. We believe that it is important to perform routine mediastinal lymph node dissection in the resection of lung masses that cannot be differentiated from primary lung cancer and metastases, if there is a diagnosed cancer in the body, in determining the prognosis and determining postoperative treatment strategies.

## Ethics

**Informed Consent:** Written informed consent was obtained from the patient for their anonymized information to be published in this article.

## Authorship Contributions

Concept: B.Ö.Ç., K.A., Design: B.Ö.Ç., K.A., Data Collection or Processing: B.Ö.Ç., F.S., S.S.E., Analysis or

Interpretation: B.Ö.Ç., N.K., O.K., Drafting Manuscript: B.Ö.Ç., K.A., N.K., Critical Revision of Manuscript: B.Ö.Ç., K.A., F.S., S.S.E., Final Approval and Accountability: B.Ö.Ç., K.A., N.K., F.S., S.S.E., O.K., Technical or Material Support: B.Ö.Ç., K.A., N.K., F.S., S.S.E., O.K., Supervision: K.A., Writing: B.Ö.Ç., K.A., N.K., F.S., S.S.E.

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