

Outcome of Surgical Intervention for Isolated Intrathoracic Lymph Node Metastasis from Infradiaphragmatic Malignancy: Report of Two Cases

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We report 2 cases with isolated intrathoracic lymph node involvement. This is an unusual manifestation of metastatic spread from an extrathoracic malignancy. Case 1 was a 47-year-old female with a history of radical hysterectomy for cervical cancer of the uterus. Left intrathoracic lymphadenopathy was detected during follow-up. These lesions were surgically removed and diagnosed as multiple lymph node metastases. Two years later, right intrathoracic lymphadenopathy was evident and excised again. Eight months after the re-thoracotomy, retroperitoneal recurrence appeared and she died of the disease. Case 2 was a 41-year-old female with a history of resection of sigmoid colon cancer with liver metastases. A solitary nodule in the left upper lobe was shown by a chest computed tomography (CT). Left upper lobectomy was performed and the lesion was diagnosed as a solitary lymph node metastasis. She has had no recurrence for 3 years since thoracotomy. (Ann Thorac Cardiovasc Surg 2006; 12: 358–61)

Key words: lymph node metastasis, thorax, colon cancer, uterine cervical cancer

Introduction

The lung is one of the most frequent metastatic sites for extrathoracic malignancies. Surgical resection of pulmonary metastases is an optimal treatment for properly selected cases.¹⁾ Occasionally, patients with lung metastases include hilar and/or mediastinal lymph node metastases. Prognosis of such cases is extremely poor and an application of metastasectomy for them is controversial.²⁾ On the other hand, isolated intrathoracic lymph node metastasis (ILNM), without lung parenchymal lesions is an unusual manifestation of metastatic spread from extra-

thoracic malignancies. Treatment strategy for such cases is not established and its prognosis is poorly known.³⁻⁵⁾ We encountered 2 cases of isolated ILNM after an initial operation for malignancy in the abdomen.

Case Report

Case 1

In November 1990, a 47-year-old female underwent a radical hysterectomy for stage IIA cervical cancer of the uterus. Histological examination revealed pelvic lymph node metastases and she underwent external radiotherapy. In April 1992, chest computed tomography (CT) showed left hilar and mediastinal lymphadenopathy, which gradually increased in size (Fig. 1). In addition, her serum squamous cell carcinoma (SCC) antigen level was elevated to 16.1 ng/ml (normal level, <1.5 ng/ml). On gallium scanning, an abnormal uptake was shown only in the left hilum. The lesion was considered to be a lymph node metastases from the uterine cervical cancer. Systemic work-up showed no other metastatic lesions. In January 1993,

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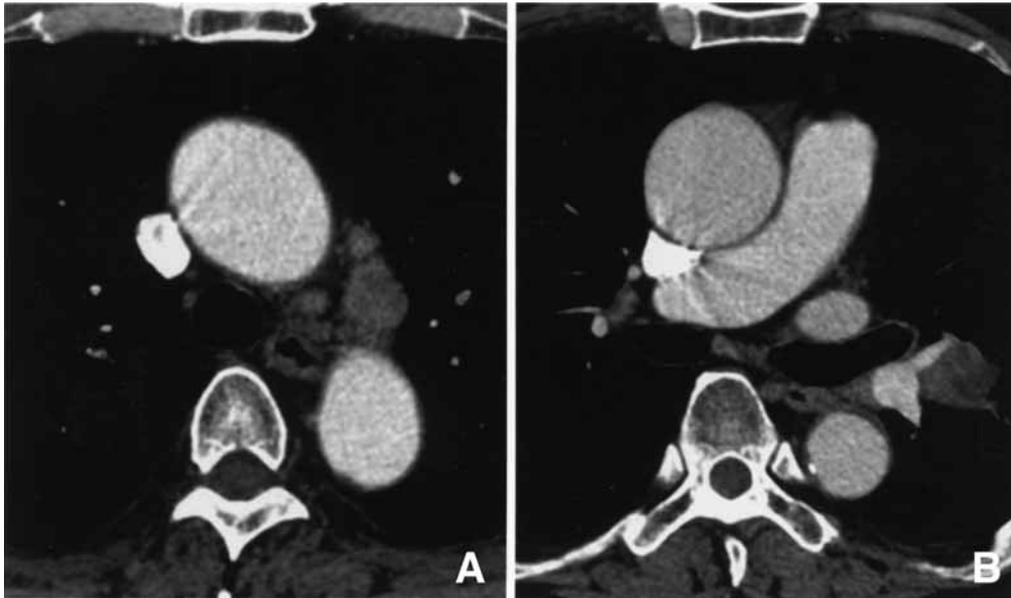


Fig. 1. Contrast-enhanced computed tomography (CT) scans of case 1 showing left hilar and mediastinal lymphadenopathy (A, B).

we performed left hilar and mediastinal lymph node. Histological examination demonstrated multiple lymph node metastases (No. 6, 11, and 12s according to the Naruke lymph node map⁶⁾) from the uterine cervical cancer. Post-operative radiotherapy (50 Gy) to the left hilum and mediastinum was carried out. After treatment for the thoracic lesion, the serum SCC antigen level decreased to 0.9 ng/ml.

In February 1995, right hilar lymphadenopathy was shown on follow-up chest CT and her serum SCC antigen level was repeatedly elevated to 19.2 ng/ml. In April 1995, the lesions were excised again and right hilum was radiated (50 Gy). The lesions were diagnosed as multiple lymph node metastases (No. 11s and 11i according to the Naruke lymph node map⁶⁾). However the serum SCC antigen level did not decrease. A retroperitoneal lymphadenopathy was revealed by magnetic resonance imaging (MR) and systemic chemotherapy was performed in July 1995. Eventually, she died of the disease 8 months after the second thoracotomy.

Case 2

In September 1997, a 41-year-old female was found to have sigmoid colon cancer with synchronous metastases to the liver. These lesions were simultaneously resected. On pathological staging, she was diagnosed as stage IV (P0, S1, H2, N0). Adjuvant chemotherapy was administered. During follow-up surveillance, hepatic recurrence was detected and a repeated hepatectomy was carried out

in August 2000. The lesion was removed completely and no metastases were revealed in the hepatic lymph nodes.

In March 2002, a follow-up chest CT showed a solitary nodule, measuring 2 cm in diameter, in the superior division of the left upper lobe (Fig. 2). At first, we considered the lesion as a solitary pulmonary metastasis. There were no other suspected lesions of recurrent disease and we planned operation for the pulmonary lesion in May 2002. As the lesion was located close to the inferior division, a left upper lobectomy was performed to ensure an adequate surgical margin. Macroscopically, the lesion was solid, yellowish-white in color, and was located along a segmental bronchus (No. 13 according to the Naruke lymph node map⁶⁾). Pathological examination revealed a lymph node metastasis from the sigmoid colon cancer (Fig. 3). Although her serum carcinoembryonic antigen (CEA) level was 21.0 ng/ml (normal level, <5.0 ng/ml) before the operation for the sigmoid colon cancer, it had been less than normal level after the primary operation. She has had no recurrence for 3 years since the thoracotomy.

Discussion

Intrathoracic lymph node involvement from an extrathoracic neoplasm has been previously reported in a series of patients with carcinoma from the head and neck, genitourinary system, breast, gastrointestinal tract, and skin.^{7,8)} The frequent metastatic pathway to thoracic lymph

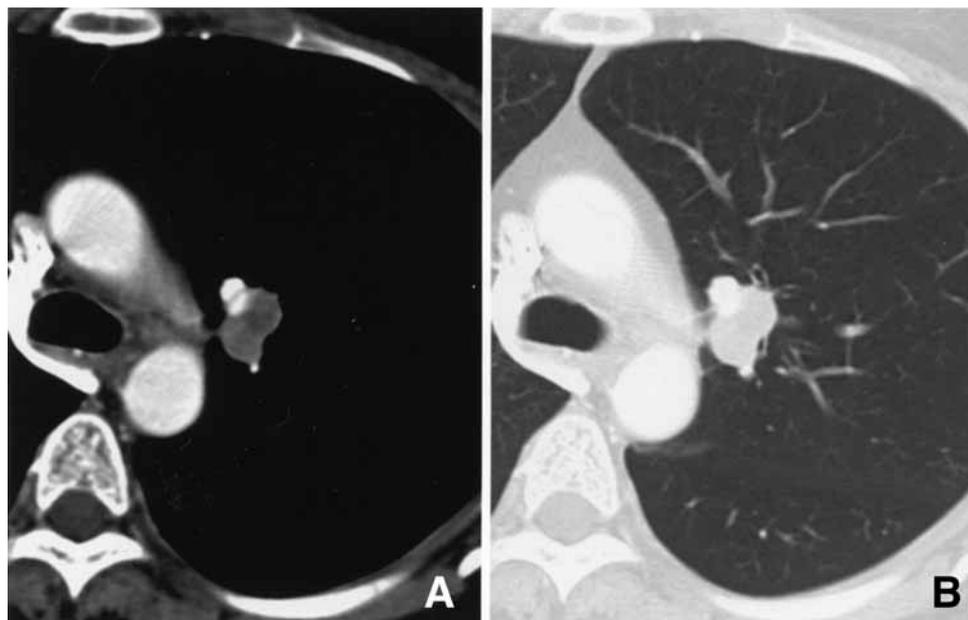


Fig. 2. Contrast-enhanced computed tomography (CT) scans of case 2 showing a well-circumscribed nodular shadow in the superior division of the left upper lobe. **A:** Mediastinal window. **B:** Lung window.

node is lymphatic spread from an intrapulmonary metastatic lesion by vascular spread.²⁾ However, isolated ILNM without intrapulmonary lesions is rarely seen. The metastatic pathway in such cases is speculated as follows: 1) extension from retrocrural and paraaortic nodes followed by antegrade flow in the thoracic duct which connects to mediastinal and intrapulmonary lymphatic channels, 2) lymphatic spread from liver metastases through several routes to the thorax.^{3,7-9)} Mostly, ILNM is associated with retroperitoneal lymph node metastases and “isolated” ILNM is rare.⁹⁾ In this report, case 1, who had multiple mediastinal and hilar lymph node metastases, eventually suffered a recurrence in the retroperitoneal lymph nodes. Her metastatic lesions might have spread through the former pathway. In contrast, no retroperitoneal lymph node metastases have been evident in case 2 with repeated hepatic metastases. Her metastatic pathway might be the latter one. In both cases, no pulmonary lesions appeared.

In general, most patients with a distant metastasis from a malignant disease can not be candidates for curative operation, because existence of a distant lesion signifies uncontrollable tumor spread. On the other hand, surgical resection of pulmonary or hepatic metastases for selected patients is thought to be valid because removal of metastases confined to the first filter organ might be beneficial to survival.^{1,10)}

Most reports of ILNM from extrathoracic malignancies came from autopsy studies and radiographical analyses.^{7-9,11,12)} Although several cases were treated by sur-

gery, the treatment strategies have not been established.³⁻⁵⁾ Vetto et al.³⁾ reported on a patient having hepatic metastasis and isolated ILNM simultaneously after surgery for colonic cancer. He underwent exploration of the mediastinal node and was treated with systemic chemotherapy. On the other hand, patients reported by Yamashita et al.⁴⁾ and Kuba et al.⁵⁾ had isolated ILNM from a colon cancer and renal cell carcinoma removed completely. However, the outcome after thoracotomy was not described in either of the reports.

Metastatic lesions of the patients in our report could be controlled locally by surgical intervention. Case 1, who had pelvic lymph node involvement at the time of operation for the primary site and in whom multiple metastases had spread to thoracic lymph nodes, which eventually relapsed systemically. Case 2, who had a solitary thoracic lesion without abdominal lymphadenopathy, has been free from recurrence for 3 years after thoracotomy. Her thoracic lesion was a “skip metastasis” that appeared without regional lymph node involvement of the primary lesion. Patients with malignant disease might have fewer treatment options if distant metastases were detected, and the prognosis was poor. While surgical intervention might be beneficial to some selected patients, the indication should be thoroughly discussed. In our experience, surgical removal of isolated ILNM from an extrathoracic malignancy was useful for local control of the lesion and could be carried out safely, particularly, in cases with “solitary” metastasis.

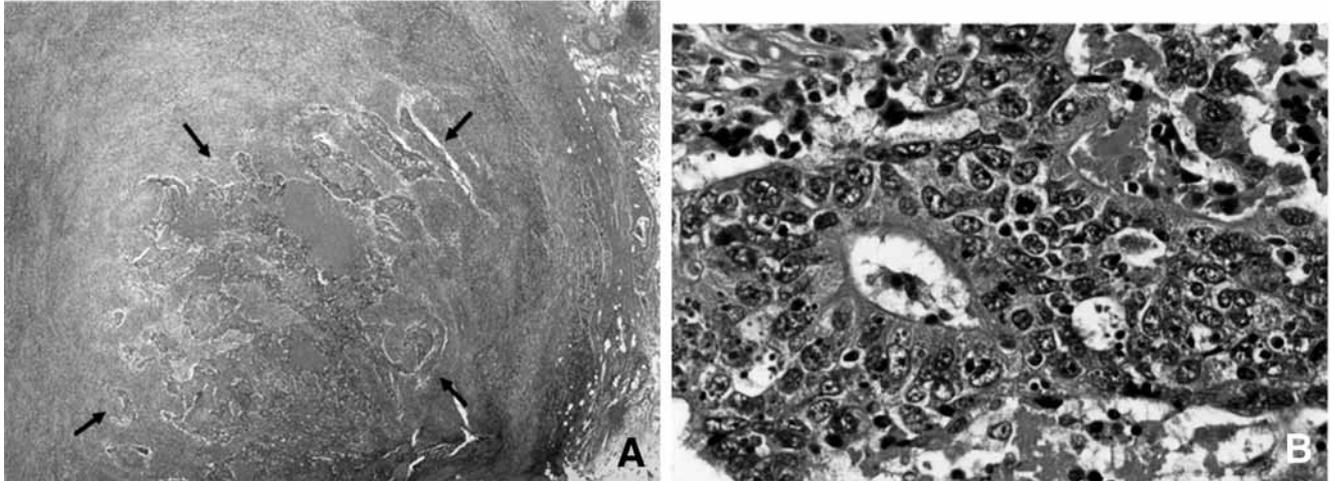


Fig. 3. Photomicrograph of the resected specimen of case 2.

A: Low-power view of the lymph node showing metastatic adenocarcinoma (arrows). (HE stain: $\times 20$)

B: High-power view of the lymph node showing tubular cancer cell nests composed of tall columnar cancer cells with brush border, consistent with metastasis from sigmoid colon cancer. (HE stain: $\times 400$)

References

- Putnam JB. Secondary tumors of the lung. In: Shields TW, LoCicero J 3rd, Ponn RB eds.; *General Thoracic Surgery*, 5th ed. Philadelphia: Lippincott Williams & Wilkins, 2000; pp 1555–76.
- Ercan S, Nichols FC 3rd, Trastek VF, et al. Prognostic significance of lymph node metastasis found during pulmonary metastasectomy for extrapulmonary carcinoma. *Ann Thorac Surg* 2004; **77**: 1786–91.
- Vetto JT, Cohen AM. Isolated spread of hepatic metastatic disease to a mediastinal lymph node. Report of a case and review of pertinent anatomy and literature. *Dis Colon Rectum* 1991; **34**: 1128–30.
- Yamashita K, Yamamoto M, Nishimura H, Akiyama H, Tsuchiya E, Tanaka S. Hilar lymph node metastasis in renal cell carcinoma. *Jpn J Thorac Cardiovasc Surg* 2000; **48**: 194–7.
- Kuba H, Sato N, Uchiyama A, et al. Mediastinal lymph node metastasis of colon cancer: report of a case. *Surg Today* 1999; **29**: 375–7.
- Naruke T, Suemasu K, Ishikawa S. Lymph node mapping and curability at various levels of metastasis in resected lung cancer. *J Thorac Cardiovasc Surg* 1978; **76**: 832–9.
- Mahon TG, Libshitz HI. Mediastinal metastases of infradiaphragmatic malignancies. *Eur J Radiol* 1992; **15**: 130–4.
- McLoud TC, Kalisher L, Stark P, Greene R. Intrathoracic lymph node metastases from extrathoracic neoplasms. *AJR Am J Roentgenol* 1978; **131**: 403–7.
- Libson E, Bloom RA, Halperin I, Peretz T, Husband JE. Mediastinal lymph node metastases from gastrointestinal carcinoma. *Cancer* 1987; **59**: 1490–3.
- Yoshidome H, Ito H, Kimura F, et al. Surgical treatment for extrahepatic recurrence after hepatectomy for colorectal metastases. *Hepatogastroenterology* 2004; **51**: 1805–9.
- Dvoretzky PM, Richards KA, Angel C, et al. Distribution of disease at autopsy in 100 women with ovarian cancer. *Hum Pathol* 1988; **19**: 57–63.
- Rose PG, Piver MS, Tsukada Y, Lau TS. Metastatic patterns in histologic variants of ovarian cancer. An autopsy study. *Cancer* 1989; **64**: 1508–13.