

# Chylopericardium Caused by Non-small Cell Lung Cancer A Rare Complication of Superior Vena Cava Syndrome

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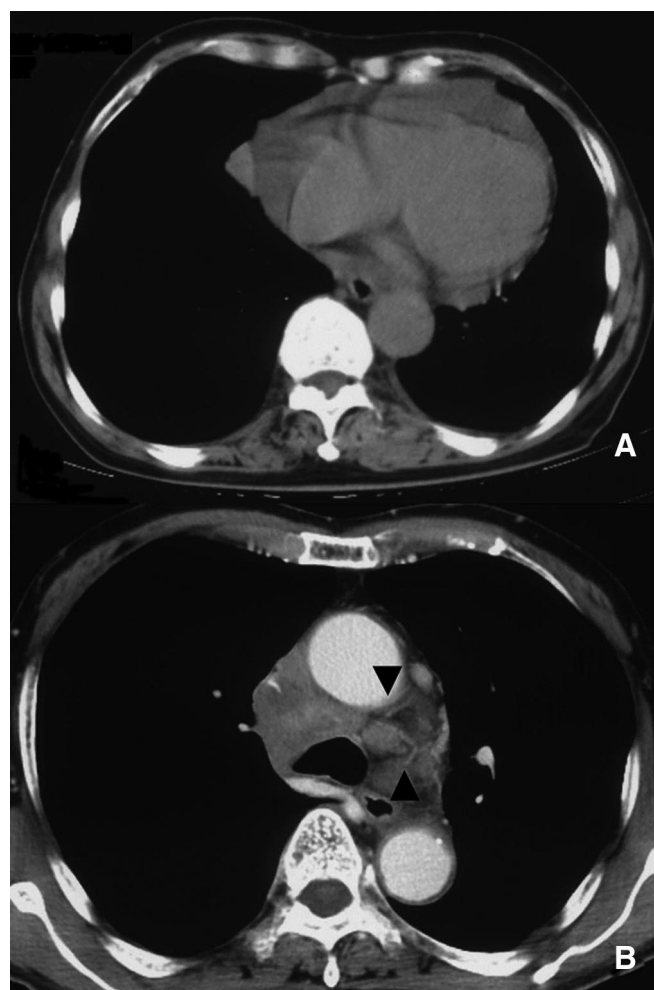
Chylopericardium represents a communication between the pericardial cavity and the lymphatics.<sup>1,2</sup> We report the first case of chylopericardium caused by lung cancer with superior vena cava (SVC) syndrome.

## CASE REPORT

A previously healthy, 77-year-old Japanese man was presented with a 2-week history of worsening dyspnea. At presentation, he was in respiratory distress and orthopneic. Blood pressure was 154/80 mmHg without paradoxical pulses, respiratory rate was 16 per minute, and the oxygen saturation was 97% with supplemental oxygen (3 L) by nasal cannula. The face and upper extremities were edematous. Computed tomography of the chest and echocardiography showed moderate amounts of pericardial effusion but no signs of tamponade (Figure 1A). Chylous effusion of 500 mL was drained by pericardiocentesis, and dyspnea was relieved. Analysis of the pericardial effusion revealed total protein at 5.2 g/dL, total cholesterol 212 mg/dL, and triglyceride 806 mg/dL. There were no malignant cells and no bacterial or mycobacterial growth. The pericardial draining tube was removed without chemical pericardiodesis. Primary adenocarcinoma of the lung and SVC syndrome were diagnosed (Figure 1B). The TMN classification was cT3N3M0 = Stage3B. Pedal lymphatic scintigraphy using <sup>99m</sup>Tc-human serum albumin revealed tracer accumulation in the mediastinal lymph nodes but not in the pericardial cavity (Figure 2).

The patient selected best supportive care at diagnosis. During the 4 weeks after the drainage, his dyspnea recurred. Chest radiograph showed cardiomegaly and bilateral pleural effusion (Figure 3A). Echocardiography revealed the reaccumulation of pericardial effusion but not so much as to require drainage again. Dexamethasone was started at 2 mg/d because of appetite loss and malaise. After 2 weeks of corticosteroid therapy, dyspnea and facial edema improved. Cardiomegaly decreased and bilateral pleural effusion was resolved

(Figure 3B). Echocardiography demonstrated a decrease in pericardial effusion. The patient continued dexamethasone without a marked increase in pericardial effusion for 8



**FIGURE 1.** A, Computed tomography (CT) of the chest on admission showing moderate amounts of pericardial effusion. B, Enhanced CT of the chest after drainage of pericardial effusion showing marked swelling of the pretracheal and subaortic lymph nodes. The superior vena cava is compressed by the swollen lymph node and is hardly visible. Collateral veins are also visible (black arrowhead).

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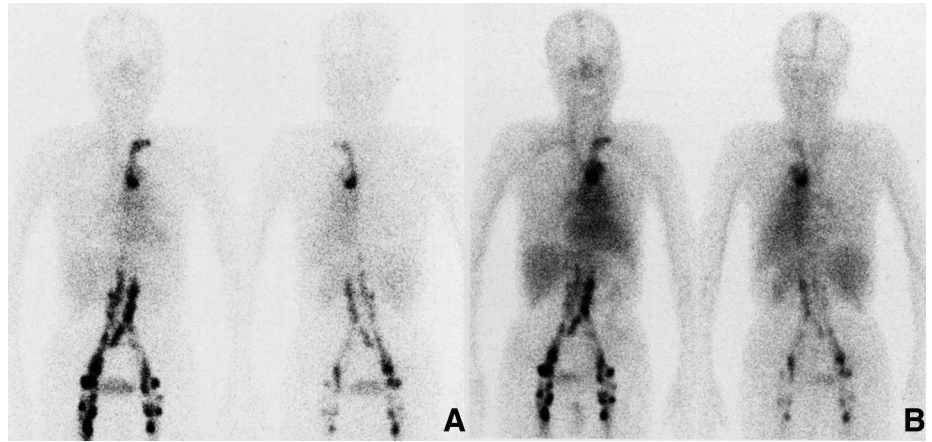
Disclosure: The authors declare no conflict of interest.

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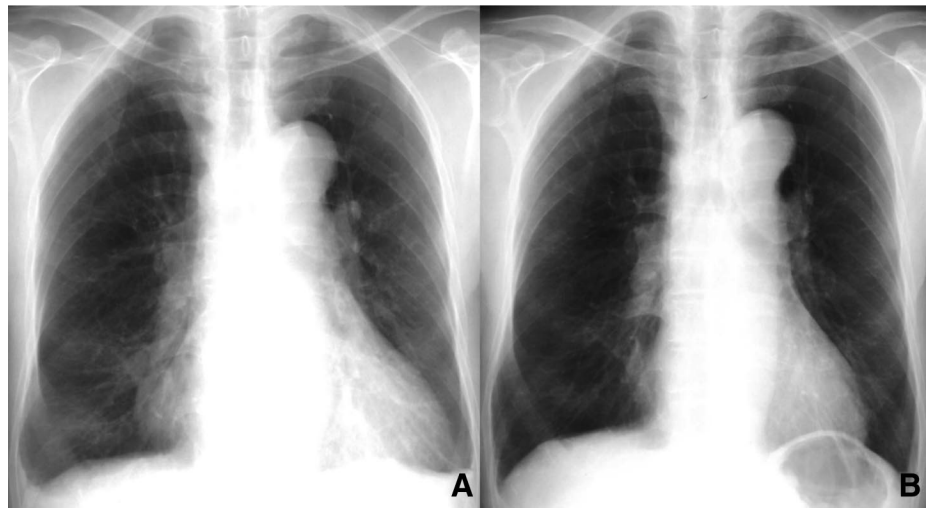
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**FIGURE 2.** A, Pedal lymphatic scintigraphy with  $^{99m}\text{Tc}$  human-serum albumin showing tracer accumulation in the mediastinal lymph nodes 1 hour after injection. B, This is more prominent 2½ hours after injection, suggesting a congestion in lymphatic flow. There is no accumulation in the pericardial sac.



**FIGURE 3.** A, Chest radiograph on readmission showing cardiomegaly and bilateral pleural effusions. B, After corticosteroid therapy for 2 weeks, cardiomegaly is reduced and pleural effusions resolved.



months, until he was transferred to another hospital for terminal care.

## DISCUSSION

Chylopericardium occurs as a result of trauma, congenital anomalies, or as a complication of open-heart surgery, mediastinal lymphangiomas, lymphangiomatous hamartoma, lymphangiectasis, and obstruction or anomalies of the thoracic duct or the lymphatics.<sup>1</sup> Although lung cancer often involves the mediastinum, there had been no reports of chylopericardium as a complication, except for postoperative traumatic cases.<sup>3,4</sup> In this case, because no communicating route to the pericardial cavity was discovered, one probable mechanism is that the obstruction of SVC by swollen mediastinal lymph nodes had caused congestion in the left subclavian vein, which prevented lymphatic inflow.

In secondary chylopericardium, the underlying diseases should be treated.<sup>1</sup> Our patient's chylopericardium was improved after corticosteroid administration without any anti-cancer treatment. The efficacy of corticosteroids in SVC syndrome remains uncertain.<sup>5</sup> One possibility is that the compensatory development of collateral veins or lymphatics reduced venous congestion and improved lymphatic flow.

In conclusion, chylopericardium can occur as a complication of lung cancer with SVC syndrome. Corticosteroids can be helpful in palliative care for NSCLC-related chylopericardium.

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## REFERENCES

1. Maisch B, Seferovic PM, Arsen DR, et al; Task Force on the Diagnosis of the European Society of Cardiology. Guidelines on the diagnosis and management of pericardial diseases executive summary: the task force on the diagnosis and management of pericardial diseases of the European society of cardiology. *Eur Heart J* 2004;25:587–610.
2. Akamatsu H, Amano J, Sakamoto T, et al. Primary chylopericardium. *Ann Thorac Surg* 1994;58:262–266.
3. Mizushima Y, Yoshida Y, Inoue A, et al. Chylopericardium following right thoracotomy for lung cancer. *Tumori* 1996;82:264–265.
4. Kimura S, Inagaki K, Yoshida K, et al. A case of chylopericardium following operation for lung cancer (author's transl) [Japanese (Abstract in English)]. *Kyobu Geka* 1978;31:778–781.
5. Rowell NP, Gleeson FV. Steroids, radiotherapy, chemotherapy and stents for superior vena caval obstruction in carcinoma of the bronchus: systematic review. *Clin Oncol* 2002;14:338–351.