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Case Report
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Isolated Mediastinal Lymph Node Metastasis of Anaplastic Carcinoma of Unknown Primary Origin: A Case Report

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Abstract

Background: Although some cases of anaplastic carcinoma of the thyroid gland, pancreas, or ovary have been reported, the anaplastic carcinoma of unknown primary origin is rare.

Case Report: A 62-year-old man was detected with a mass in the mediastinal lymph node by computed tomography. Endoscopic ultrasound with bronchoscope-guided fine-needle aspiration for the mass from the esophagus was performed and was diagnosed as pleomorphic carcinoma. The patient was diagnosed with origin undetectable non-small cell lung cancer with clinical stage IIIA and subsequently received chemoradiotherapy. The lesion in the mediastinal lymph node was observed to shrink from 38 mm to 25 mm and left upper lobectomy plus mediastinal lymph node dissection was performed. Upon microscopic examination, the lesion in the mediastinal lymph node contained the solitary proliferation of large atypical cells with lobulated nuclei. Immunohistochemical stains of the pretherapy lesion showed that it was positive for Cytokeratin (CK) AE1/AE3, CK CAM5.2, CK 7, and epithelial membrane antigen. Furthermore, the lesion was negative for CK 20, vimentin, nuclear protein in testis, S100P, and leukocyte common antigen. Contrastingly, no significant lesion could be detected in the left upper lobe of the lung. Finally, the lesion was diagnosed as origin undetectable anaplastic carcinoma.

Conclusion: We encountered a rare case of isolated mediastinal lymph node metastasis of anaplastic carcinoma of cancer of unknown primary origin that underwent chemoradiotherapy followed by surgery.

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Abbreviations

SCLC: Small-Cell Lung Cancer; CUP: Cancer of Unknown Primary Origin; FDG: Fluoro-2-Deoxy-Glucose; CK: Cytokeratin

Introduction

Anaplastic carcinoma has been reported as a rare neoplasm with a poor prognosis [1-6]. Although some cases of anaplastic carcinoma of the thyroid gland, pancreas, or ovary have been reported, few cases of anaplastic carcinoma of the lungs have been reported as Small-Cell Lung Cancer (SCLC) [1,7-10]. Cancer of Unknown Primary origin (CUP) is defined as a heterogeneous tumor that usually presents with widespread metastatic disease for which no primary site can be detected at diagnosis; additionally, the incidence rate was reported as approximately 3% of all cancer patients [11]. It was reported that the risk of metastasis in the thorax is associated with cancer of the upper aerodigestive tract or lung, or CUP [12]. In this report, we detail a case of isolated mediastinal lymph node metastasis of anaplastic carcinoma of unknown primary origin, which was diagnosed as pleomorphic carcinoma preoperatively and had undergone chemoradiotherapy followed by surgery.

Case Presentation

A 62-year-old man was detected with a mass in the mediastinal lymph node by computed tomography (Figure 1a). ^{18}F-fluoro-2-Deoxy-Glucose (FDG) positron emission tomography showed a high uptake of FDG in the mass, but no other lesions associated with FDG accumulation were

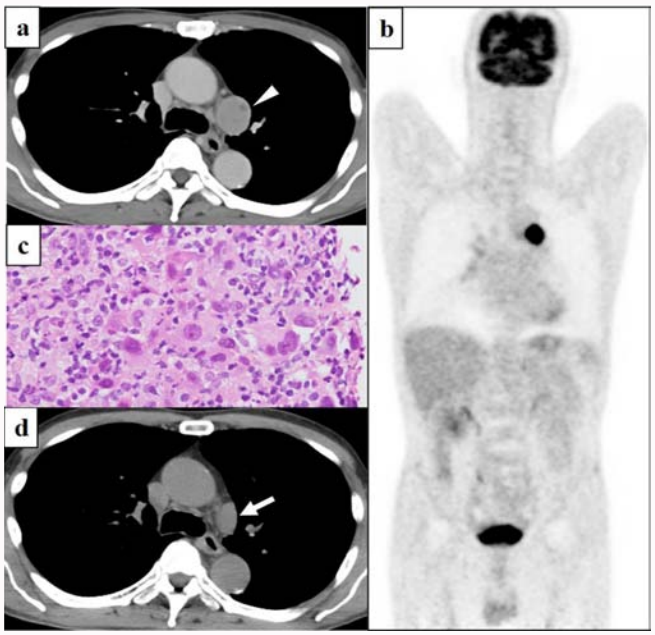

Figure 1: (a) Chest computed tomography showed a mass in mediastinal lymph node (arrow head). (b) Positron emission tomography showed a high uptake of Fluoro-Deoxy-Glucose (FDG) in the mass, but no other lesions associated with FDG accumulation. (c) The lesion was diagnosed as pleomorphic carcinoma by histopathological findings. (d) The lesion in mediastinal lymph node shrinked after chemoradiotherapy (arrow).

observed (Figure 1b). Endoscopic ultrasound with bronchoscope-guided fine-needle aspiration for the mass lesion from the esophagus was performed, and a diagnosis of pleomorphic carcinoma was achieved (Figure 1c). The patient was diagnosed with origin undetectable non-small cell lung cancer with clinical stage IIIA and subsequently received carboplatin (at a dose calculated to produce an area under the curve of 2 mg per milliliter per minute by weekly) plus nab-paclitaxel (50 mg per square meter of the body-surface area by weekly), with concurrent radiation therapy (50 Gy). The lesion in the mediastinal lymph node was observed to shrink from 38 mm to 25 mm (Figure 1d), and we decided to perform surgery. We performed left upper lobectomy plus mediastinal lymph node dissection because we suspected the upper lobe of the left lung to be the origin. Upon microscopic examination, the mass lesion of the mediastinal lymph node was observed to contain the solitary proliferation of large atypical cells with lobulated nuclei (Figure 2a). Immunohistochemical stains of the pretherapy lesion showed that it was positive for Cytokeratin (CK) AE1/AE3, CK CAM5.2, CK 7, and epithelial membrane antigen (Figures 2b-2d). Moreover, the MIB-1 labeling index of the lesion was 50% (Figure 3a). The lesion was negative for CK 20, vimentin, nuclear protein in testis, S100P, and leukocyte common antigen (Figures 3b-3f). On the other hand, no significant lesion could be detected in the left upper lobe of the lung. Finally, the lesion was diagnosed as origin undetectable anaplastic carcinoma. Although the patient did not receive adjuvant therapy, the patient is still alive without recurrence for half a year after the operation.

Discussion

Although the incidence rate of CUP was reported as approximately 3% of all cancer patients in 1997 [11], it was observed to decline to 0.7% of all cancer patients because the diagnostic tools of cancers have advanced significantly [13]. The 5-year survival rate

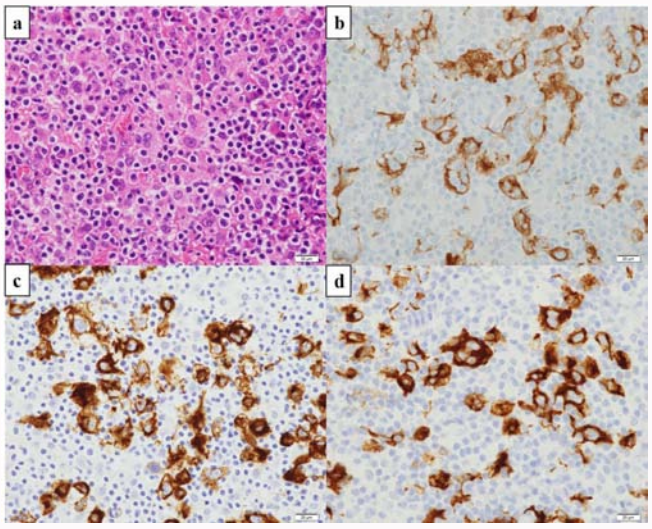

Figure 2: (a) The lesion of mediastinal lymph node contained the solitary proliferation of large atypical cells with lobulated nuclei. (b) Immunohistochemical stains of the pretherapy lesion showed positive for cytokeratin (CK) AE1/AE3, (c) CK CAM5.2, (d) CK 7 and epithelial membrane antigen.

of CUP patients has been improved from 14.2% in 1999–2002 to 27.3% in 2017 by an improvement in the treatment outcomes [13]. With improved diagnostic tools, approximately 20% of CUP patients express clinical and/or pathologic characteristics, classifying them into one of several known "treatable subsets" [14]. On the other hand, the CUP patients of "untreatable subsets" mostly received empirical chemotherapy with platinum or taxane combinations, and the response rates were approximately 20% [15]. Although it was not possible to determine whether the present case was of the "treatable" or "untreatable" subset, chemoradiotherapy with carboplatin plus nab-paclitaxel was effective. It was reported that metastases in the thorax were associated with a relative's CUP and cancers in the upper aerodigestive tract and lung [12]. Although the mediastinal lymph node metastasis in the present case could not be denied as a metastasis from the upper aerodigestive tract or lung, the primary origin could not be detected and, therefore, was diagnosed as CUP. Although CUP is usually diagnosed with severe and rapidly worsening metastasis-related symptoms [11,16,17], the patient in the present case did not have any symptoms, and the only isolated metastasis was found in the mediastinal lymph node. Although there are some reports of anaplastic carcinoma of the thyroid gland, pancreas, or ovary, there are few reports of anaplastic carcinoma of the lung [1-10]. Although anaplastic carcinoma from the lung is often reported as SCLC [1,7-9], the pathological findings of the present case did not show the features of SCLC. On the other hand, the survival improvement of patients with large cell anaplastic carcinoma who received surgical treatment has been reported [10]. Although the primary origin of the present case could not be detected from the imaging modalities and resected lung specimens, pulmonary resection was unavoidable because the possibility that the primary origin was the lung was not ruled out preoperatively. However, in the future, it is necessary to consider whether to perform pulmonary resection when a similar case occurs.

Conclusion

We encountered a rare case of isolated mediastinal lymph node metastasis of anaplastic carcinoma of CUP treated by chemoradiotherapy followed by surgery.

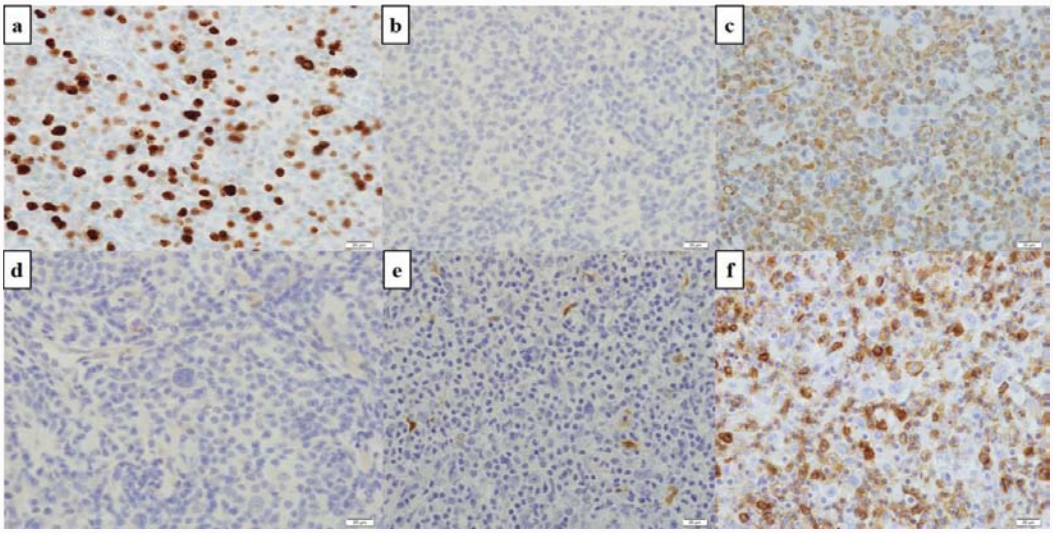

Figure 3: (a) The MIB-1 labeling index of the lesion showed 50%. (b) The lesion was negative for CK 20, (c) vimentin, (d) nuclear protein in testis, (e) S100P, and (f) leukocyte common antigen.

References

1. Brigham BA. Small cell anaplastic carcinoma of the lung: A review of growth characteristics and implications for chemotherapy. Cancer Chemother Pharmacol. 1982;9:1-5.
2. Kim DY, Joo JK, Ryu SY, Kim YJ, Kim SK, Juhng SW. Metastatic anaplastic carcinoma of the small intestine arising from the lung. Cancer Res Treat. 2003;35:364-6.
3. Segerhammar I, Larsson C, Nilsson IL, Bäckdahl M, Höög A, Wallin G, et al. Anaplastic carcinoma of the thyroid gland: Treatment and outcome over 13 years at one institution. J Surg Oncol. 2021;106:981-6.
4. Oka K, Inoue K, Sugino S, Harade T, Tsuji T, Nakashima S, et al. Anaplastic carcinoma of the pancreas diagnosed by endoscopic ultrasound-guided fine-needle aspiration: A case report and review of the literature. J Med Case Rep. 2018;12(1):152.
5. Hillesheim PB, Farghaly H. Anaplastic spindle cell carcinoma, arising in a background of an ovarian mucinous cystic tumor: A case report with clinical follow up, review of the literature. Int J Clin Exp Pathol. 2010;3:808-11.
6. Okumura T, Muronosono E, Tsubuku M, Terao Y, Takeda S, Murayama M. Anaplastic carcinoma in ovarian seromucinous cystic tumor of borderline malignancy. J Ovarian Res. 2018;11:77.
7. Hansen HH, Dombernowsky P, Hansen M, Hirsch F. Chemotherapy of advanced small-cell anaplastic carcinoma. Superiority of a four-drug combination to a three-drug combination. Ann Intern Med. 1978;89:177-81.
8. Nixon DW, Murphy GF, Sewell CW, Kutner M, Lynn MJ. Relationship between survival and histologic type in small cell anaplastic carcinoma of the lung. Cancer 1979;44:1045-9.
9. Dombernowsky P, Hansen HH. Combination chemotherapy in the management of superior vena caval obstruction in small-cell anaplastic carcinoma of the lung. Acta Med Scand. 1978;204:513-6.
10. Califano L, Sanguedolce F, Staibano S, Pannone G, Tortorella S, Serpico R, et al. Large oral soft tissue metastasis from anaplastic carcinoma of the lung mimicking a primitive malignancy: Case report and brief review of the literature. Minerva Stomal. 2008;57:447-51.
11. Briasoulis E, Pavlidis N. Cancer of unknown primary origin. Oncologist. 1997;2:142-52.
12. Hemminki K, Sundquist K, Sundquist J, Heminki A, Ji J. Location of metastases in cancer of unknown primary are not random and signal familial clustering. Sci Rep. 2016;6:22891.
13. Boo YK, Park D, Lim J, Lim HS, Won YJ. Descriptive epidemiology of cancer of unknown primary in South Korea, 1999-2017. Cancer Epidemiol. 2021;74:102000.
14. Hainsworth JD, Greco FA. Gene expression profiling in patients with carcinoma of unknown primary site: from translational research to standard of care. Virchows Arch. 2014;464:393-402.
15. Pavlidis N, Khaled H, Gaafar R. A mini review on cancer of unknown primary site: A clinical puzzle for the oncologists. J Adv Res. 2015;6:375-82.
16. Kolling S, Ventre F, Geuna E, Milan M, Pisacane A, Boccaccio C, et al. Metastatic cancer of unknown primary or primary metastatic cancer? Front Oncol. 2019;9:1546.
17. Hemminki K, Bevier M, Sundquist J, Hemminki A. Cancer of Unknown Primary (CUP): does cause of death and family history implicate hidden phenotypically changed primaries? Ann Oncol. 2012;23:2720-4.