

Case Report

Primary Tracheal Malignant Lymphoma Detected during a Regular Checkup in an Asbestos Dust-Exposed Smoker

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Primary tracheal malignant lymphoma is a rare disease; only 30 cases have been reported to date. A 73-year-old Japanese man with a history of asbestos exposure was undergoing biannual chest computed tomography (CT) twice a year as a routine procedure for those previously exposed to asbestos. He had been smoking since the age of 32. In September 2010, chest CT during this regular checkup revealed a polypoid lesion in his trachea and pleural plaques, which were suspected to be caused by asbestos. Bronchoscopy performed in October revealed a polypoid lesion with granules and nodules in the trachea. A diagnosis of non-Hodgkin lymphoma (NHL) and extranodal marginal-zone B-cell lymphoma of mucosa-associated lymphoid tissue (MALT) was confirmed by histological analysis of the biopsy specimens. To our knowledge, this is the first case of primary tracheal lymphoma associated with a history of asbestos exposure. Several reports have documented no correlation between asbestos and malignant lymphoma. In addition, the correlation between smoking and NHL is weak. Although we cannot exclude the possibility of a simple coincidence of asbestos, smoking, and tracheal lymphoma, this case suggests that asbestos and smoking might have multiplicative effects in the development or progression of tracheal lymphoma.

Key words: bronchus-associated lymphoid tissue, tracheal lymphoma, regular checkup, asbestos, smoking

Primary tracheal tumor is a rare disease comprising only 0.1% of all malignancies with the most frequently representing types being squamous cell carcinoma and adenoid cystic carcinoma [1]. Non-Hodgkin lymphoma (NHL) confined to the trachea is exceedingly rare and is estimated to account for less than 0.5% of all tracheal tumors. To date, fewer than 30 cases of primary tracheal NHL have been reported in the literature [2].

We report a tracheal lymphoma detected in a 73-year-old man with a history of exposure to asbestos dust and smoking, who had been undergoing biannual chest CT as a part of his routine checkup.

Case Report

A 73-year-old man had been undergoing biannual chest CT since March 2010 as part of his routine checkups as he had worked in the construction industry and had been exposed to asbestos dust for three years. In addition, he had a history of hypertension and diabetes mellitus, for which he had been referred to another hospital. His father, older brother, and

Received July 2, 2013; accepted January 31, 2014.

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younger sister had died due to hepatocellular carcinoma. He had smoked about half a pack of cigarettes daily since the age of 32.

In September 2010, chest CT performed during a regular checkup revealed a polypoid lesion in his trachea (Fig. 1A, 1B). Pleural plaques were observed as well (Fig. 1C). In October, bronchoscopy revealed a polypoid lesion with granules and nodules. Capillaries were observed on the surface of the lesion, and except for the area of the lesion, the trachea appeared to be normal (Fig. 2). During biopsy, the lesion was soft. Histological analysis of the biopsy specimen revealed small-to-medium-sized lymphocytes infiltrating the subepithelial connective tissue (Fig. 3A). The lymphoma cells resembled centrocytes, which have slightly irregular nuclei with moderately dispersed chromatin and inconspicuous nucleoli. Plasma cell differentiation with Dutcher bodies was present (Fig. 3B). Immunophenotypically, tumor cells were positive for B-cell marker CD20, and negative for CD3, CD5, CD10 and the cyclin D1, in addition Ig-Kppa monotypic and Ki-67 labeling indexes were low. A histological diagnosis of extranodal marginal zone lymphoma of mucosa-associated lymphoid tissue (MALT lymphoma) was confirmed. The lesion was insignificant and was quite difficult to detect in a chest CT recorded half a year back in March, 2010; however, it was observed to be enlarged on the chest CT recorded in September, 2010. Treatment was deemed necessary because of disease progression.

The patient was admitted to our hospital on January 18, 2011. His serum was negative for HBs antigen, and HBV-DNA could not be detected in his serum by PCR. Cervical, chest, abdominal, and pelvic CT did not indicate any involvement of lymph nodes or visceral organs. The Ann Arbor stage of the lesion was determined to be IE. From the 8th day, he was administered 500mg rituximab intravenously four times in a month with a one-week interval; no adverse effects related to rituximab administration were observed. He was discharged on February 10, 2011. Thereafter, in March 2011, chest CT and bronchoscopy revealed tumor regression. He has been followed up with a biannual chest CT in our hospital without further treatment since then; he has been healthy through his last follow-up, conducted in March 2013.

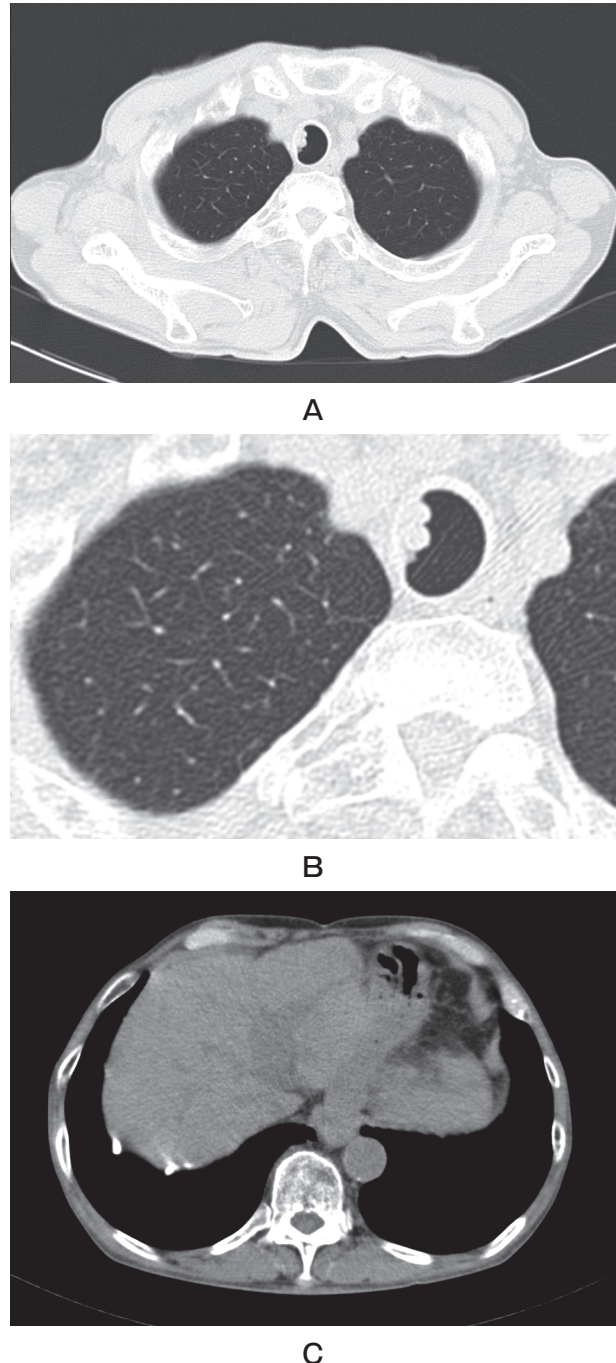


Fig. 1 A and B, Non-enhanced transverse CT images during a regular checkup in September 2010 obtained at the level of the brachiocephalic trunk showing multiple, smooth surface, small nodular polypoid lesions along the right inner wall of trachea; C, Right pleural thickening with calcified plaques above the diaphragm were seen.

Discussion

In this case, our findings suggest that polypoid lesions on the trachea should not be overlooked in chest CT, even though the trachea has a smaller proportion of abnormalities compared with that in the

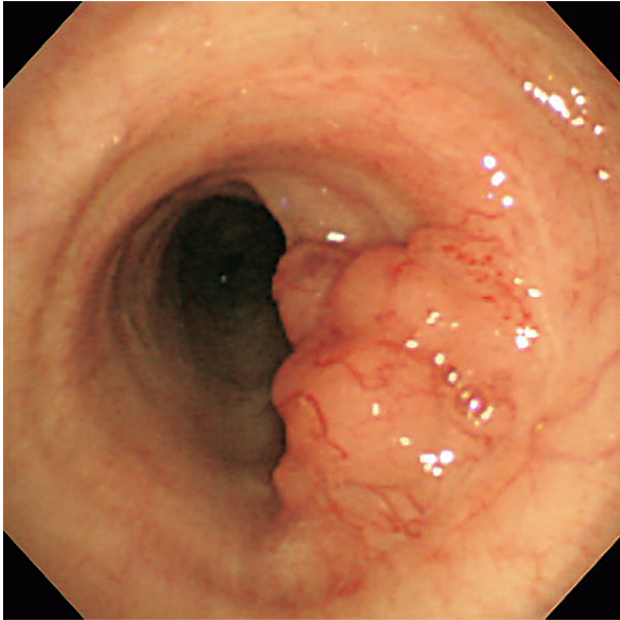


Fig. 2 Bronchoscopy revealed a polypoid lesion with granules and nodules.

lung or mediastinum.

The non-Hodgkin lymphoma subtype of marginal zone lymphoma includes 3 distinct diseases that have been historically classified together because they appear to arise from post-germinal-center marginal-zone B cells and share a similar immunophenotype: positive for B-cell markers CD19, CD20, and CD22, and negative for CD5, CD10, and usually CD23. The three diseases in this category that are recognized in the REAL/WHO classification systems include extranodal marginal-zone B-cell lymphoma of mucosa-associated lymphoid tissue (MALT) type (MALT-type lymphoma, MALT lymphoma), nodal marginal-zone B-cell lymphoma, and splenic marginal-zone B-cell lymphoma (\pm villous lymphocytes) [3]. Extranodal marginal-zone B-cell lymphoma, also called MALT, is an extranodal lymphoma that arises in a number of epithelial tissues, including the stomach, salivary gland, lung, small bowel, and thyroid. Extranodal MZL constitutes about 5% of all NHLs [3], and almost 50% of all gastric lymphomas [4–6]. A subgroup of extranodal MZL, bronchus-associated lymphoid tissue (BALT) lymphoma, comprises 1% of all lymphomas and more than two-thirds of all primary NHLs of the lung [7].

With regard to Ann Arbor stage-IE NHL confined to the trachea, chemotherapy, radiotherapy, or surgical resection has been recommended for management

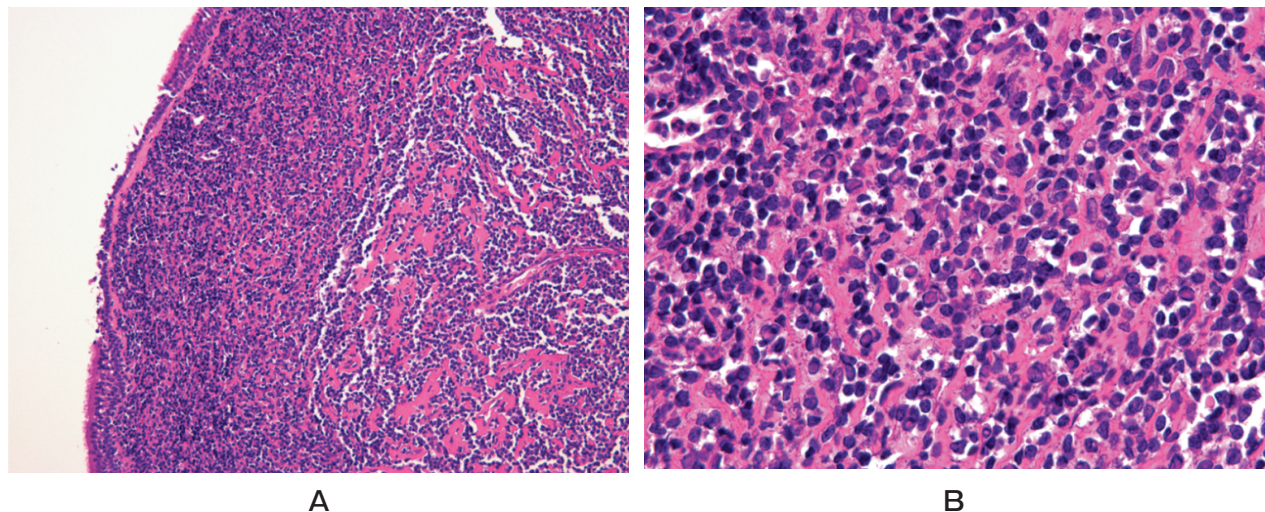


Fig. 3 Histological analysis of the biopsy specimen. **A**, Low-power magnification of Hematoxylin and Eosin staining showing infiltration of small-to-medium-sized lymphocytes around the bronchioles; **B**, High-power magnification: Centrocyte-like cells with plasma differentiation. Dutcher bodies were observed.

[2]. In this case, we chose single-agent rituximab therapy because the lesion was small and confined to the trachea [8]. At the time this report was written, no progression of disease had been seen for 2 years without further treatment. Estimates of five-year overall survival for such a condition in various studies have ranged from 55% to 79% [9–13]. Although the prognostic factors are not well defined, the overall prognosis is generally good compared with that of other forms of NHL.

BALT can be induced by smoking, rheumatoid arthritis, or systemic sclerosis; moreover, BALT lymphoma is associated with chronic inflammation [7]. However, the present case had no history of collagen disease or chronic inflammation. It is well known that asbestos can cause malignant mesothelioma and lung cancer, but several reports have failed to find an increased risk of NHL associated with asbestos exposure [14–17]. The present case might have affected by asbestos, as revealed by the presence of pleural plaques. In addition, smoking is not a risk factor or is a weak risk factor for NHL [18, 19]. We cannot exclude the possibility of a simple coincidence of asbestos, smoking, and tracheal lymphoma in the present case. However we could speculate that asbestos and smoking might have resulted in multiplicative effects promoting the development or progression of tracheal lymphoma.

NHL with asbestos exposure has been reported in rare cases, such as one case of tonsillar lymphoma [20]. However, no report was found in MEDLINE using the key words “trachea”, “lymphoma”, “malignant” and “asbestos”, which suggests that this case might probably be the first of its kind to be reported.

Thus, similar to this patient, individuals exposed to asbestos might benefit from not only receiving regular checkups by chest CT but also refraining from smoking in order to avoid malignancy.

Acknowledgments. We thank Dr. Shunji Fujie for his useful radiological advice and suggestions.

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