# Slow-growing primary marginal zone B-cell lymphoma arising in the chest wall in a patient without a history of tuberculosis

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## Abstract

**A 57-year-old man with a 15-year history of a right chest wall mass lesion without follow-up for 5 years was admitted to our hospital without any symptoms or evidence of malignancy. On MRI, an additional small subcutaneous mass lesion was found. Histology of both lesions revealed marginal zone B-cell lymphomas. Primary chest wall marginal zone B-cell lymphomas are rare; this report discusses the case and the literature on chest wall lymphomas.**

**Keywords:** Marginal zone B-cell lymphoma, MRI, chest wall, slow growing

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Primary tumors of the chest wall are not common, and the incidence of malignancy is approximately 50% (1). Usually, malignant chest wall tumors are metastatic or invasive tumors that are derived from breast and lung tumors (2). Chest wall lymphomas account for 2.4% of chest wall tumors, and most are closely associated with preceding longstanding pleural disease such as tuberculous pyothorax and pneumothorax of longstanding tuberculosis (1). In this report we present a case of a primary malignant chest wall lymphoma without pre-existing pleural disease.

## Case report

A 57-year-old man had noticed a right chest wall mass lesion for 15 years, but had ignored the lesion in the 5 years before presentation. He was admitted to our hospital without significant symptoms and with no history of tuberculosis. Magnetic resonance imaging (MRI) was performed, and a 5-cm-diameter lesion was found. The signal was isointense on T1-weighted imaging (T1WI) and hyperintense on T2-weighted imaging (T2WI) (Fig. 1). Needle biopsy was performed, and histopathology showed lymphocyte infiltration with no evidence of malignancy. The patient was followed up for the next 7 years, and during that interval he had no significant symptoms.

On MRI after 7 years of follow-up, the primary chest wall mass lesion was without any significant change, but a small subcutaneous mass lesion was found nearby. The MRI signal of this subcutaneous mass was almost identical with the original mass (Fig. 2). Diffusion-weighted imaging (DWI) was performed and both lesions exhibited high signal on DWI and a low apparent diffusion coefficient (ADC) (about 0.5) on the ADC map (Fig. 3). In light of the MRI findings, hypercellular malignant tumors (including melanoma and lymphoma), atheroma, and nodular fasciitis were suspected. Excisional biopsy was not performed since that would make definitive re-excision more extensive due to the contamination of surrounding tissue planes. Therefore an open biopsy of both lesions was performed. The mass lesions were both found to be marginal zone B-cell lymphomas (Fig. 4).

In this case, no other tumors were found, so radiation therapy only (36 Gy/20 French) was given. The patient was discharged, and follow-up found the patient in good condition with no apparent signs of recurrence after 2 years.

## Discussion

Primary chest wall tumors are not common, and approximately 50% are malignant (1). Malignant chest wall tumors are usually metastatic or represent local invasion from primary lung cancers or breast cancers. It has been reported that chest wall lymphomas are extremely rare, and account for only 2–3% of chest wall tumors (2).

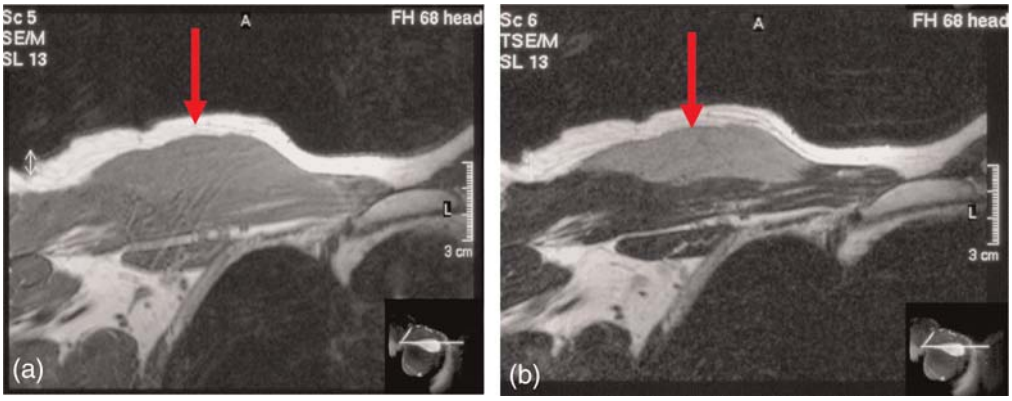


**Fig. 1** Initial MRI demonstrated a chest wall mass lesion with an intermediate signal on T1-weighted imaging (a) and an intermediate signal on T2-weighted imaging (b). The boundary between the mass lesion and muscle seemed clear

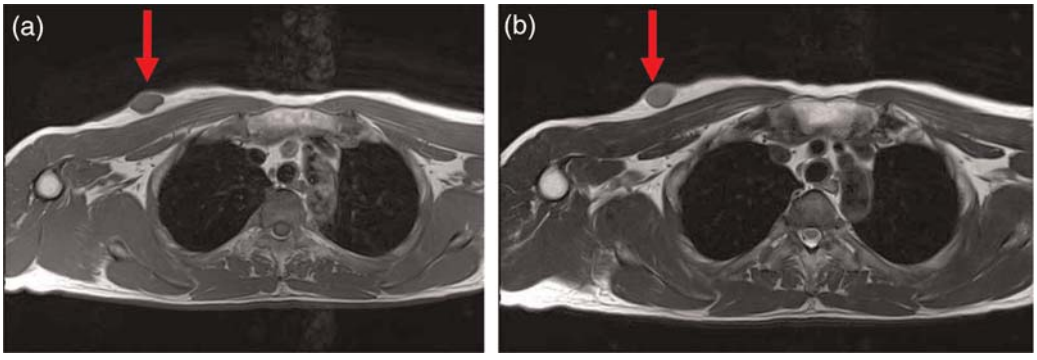


**Fig. 2** MRI scan after 7 years of follow-up demonstrated a small subcutaneous mass lesion. The signal from both T1WI (a) and T2WI (b) was almost the same compared to the ordinary mass lesion

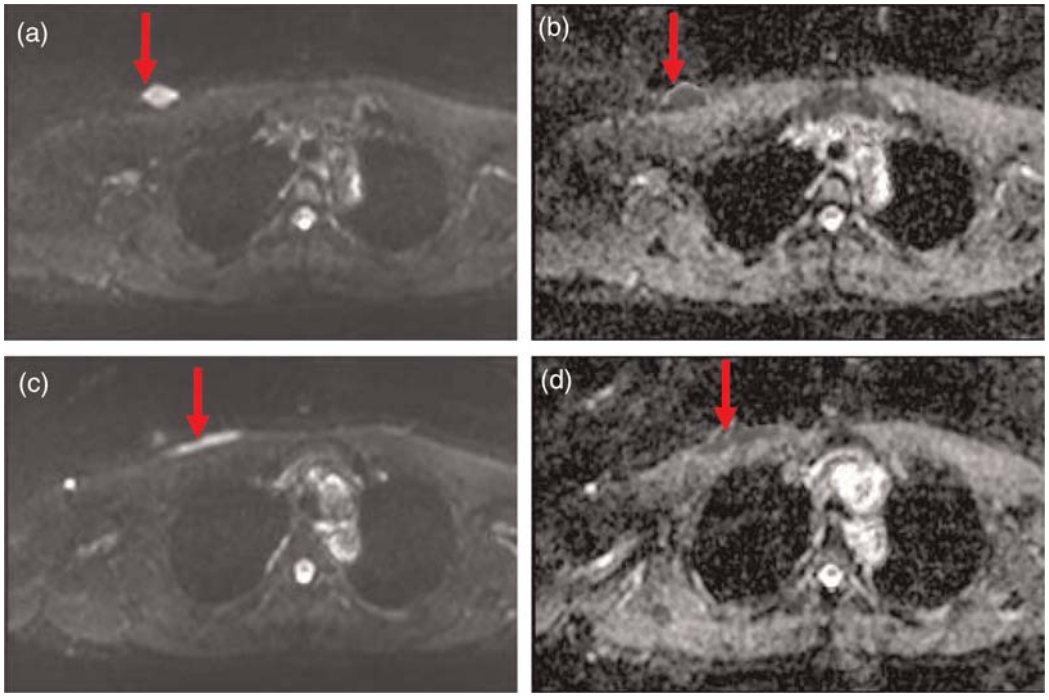


**Fig. 3** Both mass lesions exhibited high signals on DWI (a, c) and low signals on ADC maps (b, d)

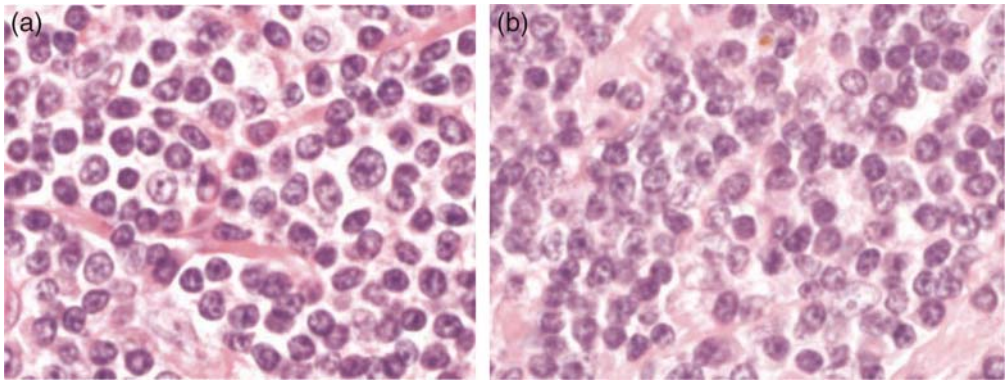


**Fig. 4** Pathological findings of both original (a) and subcutaneous (b) mass lesions representing marginal zone B-cell malignant lymphoma (H&E stain)

Usually, primary pleural lymphoma is closely associated with chronic tuberculosis pyothorax, pneumothorax for treatment of lung tuberculosis, or some other chronic stimulation of B-cells such as rheumatoid arthritis, Sjögren's syndrome, or Epstein-Barr virus (3, 4). Considering these factors, primary malignant lymphoma arising in the chest wall without pre-existing pleural disease, as with the present case, are not common (1, 2).

Hirai *et al.* (1) described nine cases of chest wall malignant lymphomas without pre-existing pleural disease. Eight of these nine cases were diffuse large cell type B-cell lymphomas, and the other was a marginal zone B-cell lymphoma. In the present case, no history of tuberculosis or other chronic history that could have caused stimulation of B-cells against the chest wall was found (1).

In previous reports, when the tumors were identified, they were usually large with pleural effusion or atelectasis of the lung, independent of the tumor histology (1–3, 5). In the present case, the growth of the tumors was slow, which is a rare finding. No other symptoms were found during 7 years of follow-up.

Marginal zone B-cell lymphomas are low grade lymphomas most often diagnosed in the stomach. However, they can also develop in the lung, thyroid, salivary glands, eye, skin, or soft tissues (6). The literature revealing the MRI signal of marginal zone B-cell lymphoma is limited. Maksimovic *et al*. (6) reviewed MRI of marginal zone B-cell lymphomas and found that the MRI signal were usually isointense on T1WI and intermediate to hyperintense on T2WI.

In the present case, the mass lesions were isointense on T1WI and hyperintense on T2WI. Moreover, DWI was performed, and the signal was high on DWI and low ADC values were seen on ADC maps. From the high signal and low ADC value on DWI of the two lesions, hypercellular aggressive malignant lesions were considered. Malignant lymphoma is compatible with this signal pattern (7). Even though a low grade marginal B-cell lymphoma was diagnosed histologically from the signal pattern on MRI, it was impossible to distinguish low grade marginal B-cell lymphoma from other types of lymphoma such as diffuse large B-cell lymphoma or smoldering adult T-cell lymphoma. Furthermore, benign conditions such as atheroma and nodular fasciitis could not be excluded either when considering the history of slow growth and the signal patterns on MRI.

Diagnosis of chest wall malignant lymphoma seems to be difficult because neither necrosis nor cystic degeneration is generally found near the tumor in patients with chronic tuberculosis. Therefore, evaluation with computed tomography (CT), MRI, and accurate biopsy are necessary. In the present case, a hypercellular malignant lesion was suspected from the MRI, but benign conditions could not be excluded considering the long clinical history.

In conclusion, malignant lymphoma must be considered when a slow-growing chest wall mass lesion is identified.

**Conflict of interest:** None.

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