Thymic MALT lymphoma mimicking parathyroid adenoma uptake on ^{99m}Tc-MIBI parathyroid scintigraphy

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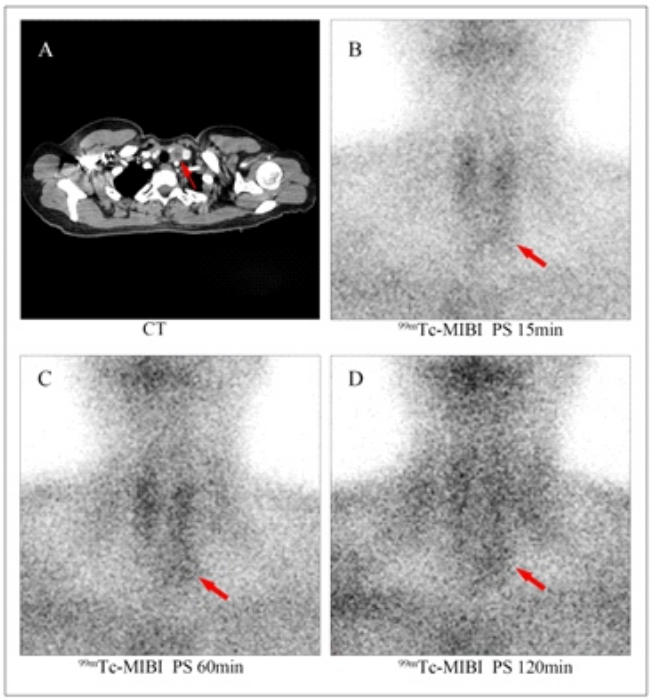

Figure 1. In a 45-year-old woman, a nodule (A, CT, small arrow) behind the lower left lobe of the thyroid was incidentally found on a chest enhanced computed tomography (CT) scan that was performed for pneumonia. The nodule was approximately 2.2x2.0cm, with a regular and clear border and heterogeneous moderate enhancement. Parathyroid adenoma was suspected, even though the serum calcium and parathormone levels were normal. For this reason, dual-phasetechnetium-99m-methoxy-isobutylisonitrile (^{99m}Tc-MIBI) parathyroid scintigraphy (PS) was performed the next day. Early imaging (B, 15min, large arrow) and delayed imaging (C and D, 60min and 120min, large arrows) demonstrated abnormally increased uptake in the lower left thyroid lobe. The abnormally increased uptake was more increased in the delayed phase than in the early phase. Thyroid tissue radioactivity was nearly washed out at 120min on delayed imaging. The findings were consistent with parathyroid adenoma.

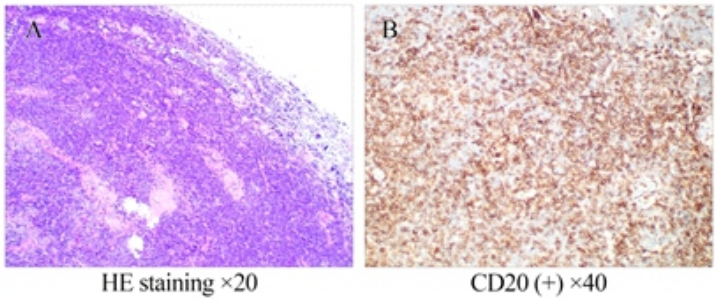

Figure 2. The nodule behind the lower left lobe of the thyroid was subsequently resected. Pathological examination (A, hematoxylin-eosin staining, ×20) revealed thymic tissue, including Hassall's corpuscles, and demonstrated lymphoid proliferation and kappa light chain restriction. Immunohistochemically, the tumor cells were positive for some mucosa-associated lymphoid tissue (MALT) lymphoma markers, including CD20 (B, ×40), CD5, CD43, CD23, CK19, CD3, Ki-67 (+, 10%), and kappa. However, TDT, CD1a, CD10, Bcl-6, and lambda were negative. These findings were consistent with MALT lymphoma of the thymus.

Primary MALT lymphomas of the thymus are quite rare [1]. The first description of thymic MALT lymphoma was by Isaacson [2], who originally described two patients with this condition and alerted pathologists that low-grade B-cell lymphomas of the

MALT type, which had already been described in other anatomical areas, could also occur in the thymus [3, 4]. Thymic MALT lymphoma is generally associated with autoimmune disorders in middle-aged women and is usually diagnosed by histological examinations of surgical specimens [5, 6]. In some reports, on a positron emission tomography (PET)/CT scan, thymic MALT lymphoma presented increased fluorine-18-fluorodeoxyglucose (^{18}F-FDG) uptake [7, 8]. In our case, thymic MALT lymphoma mimicked parathyroid adenoma uptake on ^{99m}Tc-MIBI PS, which presented increased ^{99m}Tc-MIBI uptake in early and delayed imaging. Technetium-99m-MIBI PS has high diagnostic performance for detecting and localizing parathyroid adenoma, especially when the patient has hyperfunctioning parathyroid glands [9, 10]. However, there are still some conditions that may cause false-positive findings on PS with ^{99m}Tc-MIBI,such as some tumors of the thyroid, lung and thymus or metastatic tumors [11, 12], however, many of their mechanisms remain to be elucidated. This case illustrates that ^{99m}Tc-MIBI uptake in thymic MALT lymphoma can be a possible cause of false-positive uptake on ^{99m}Tc-MIBI PS, which should be considered by nuclear physicians.

Conflicts of interest and sources of funding
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