

^{99m}Tc MIBI Scintigraphy for Classification of Amiodarone-induced Thyrotoxicosis

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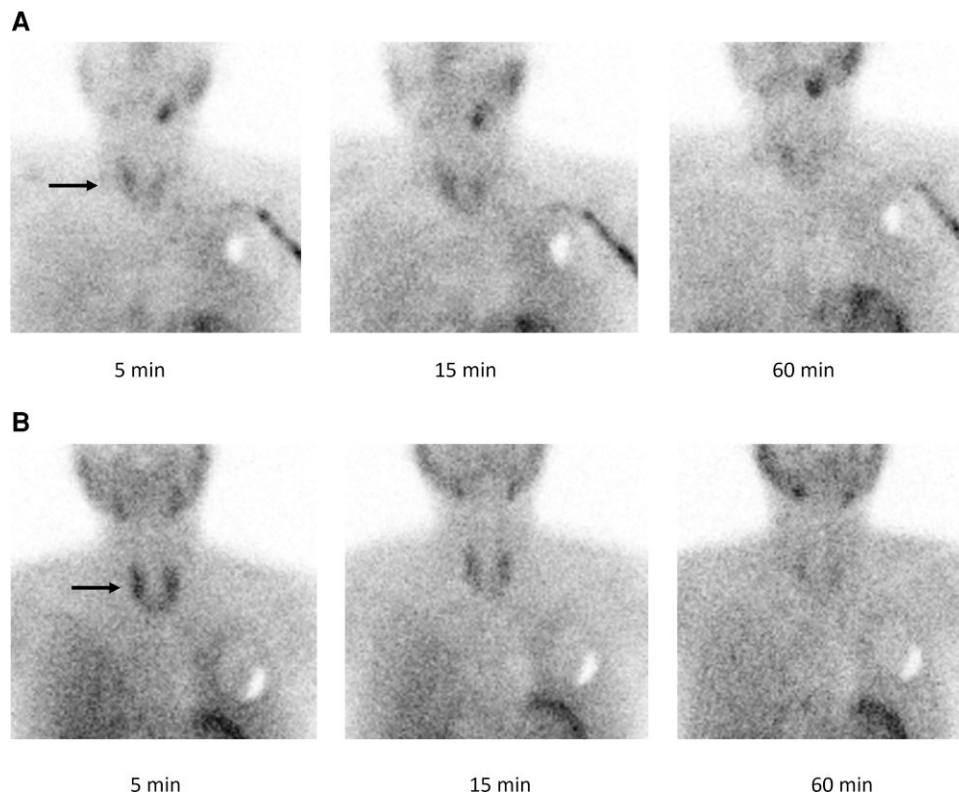
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Abbreviations: AIT, amiodarone-induced thyrotoxicosis; MIBI, 2-methoxyisobutyl-isonitrile.

Image Legend

Classification of amiodarone-induced thyrotoxicosis (AIT) is challenging, and many clinicians initially treat for both types. Glucocorticoids shorten the duration of thyrotoxicosis in type

2 AIT, but have risk for severe adverse effects, especially with underlying heart failure. Thyroid uptake of radioactive-iodine is blocked by amiodarone, so its absence does not rule in type 2 AIT. ^{99m}Tc MIBI (2-methoxyisobutyl-isonitrile) scintigraphy has recently been suggested for AIT



classification, with clear uptake indicating type 1 AIT and decreased uptake type 2 AIT (1, 2). Here, we present 2 cases of AIT with heart failure exacerbation requiring hospitalization. In both, amiodarone treatment was long-standing with no underlying thyroid disease or antibodies. Color flow Doppler showed no hyperemia in case A and mild hyperemia in case B. Presumptive diagnoses of type 2 AIT and indeterminate AIT were made accordingly. The patient with case A also had cellulitis, making glucocorticoid treatment especially concerning. We used ^{99m}Tc MIBI scintigraphy to validate presumptive AIT classifications. In case A, ^{99m}Tc MIBI uptake is faint throughout, consistent with type 2 AIT; subsequent prednisone treatment led to rapid resolution of thyrotoxicosis. In case B, uptake of ^{99m}Tc MIBI is clear at 5 minutes with rapid washout at 15 and 60 minutes, a pattern described as a mixed/indeterminate (2). The patient was treated with combined prednisone/methimazole with gradual improvement. Both cases exemplify how ^{99m}Tc MIBI scintigraphy can rule in an element of type 2 AIT that may respond to glucocorticoids. Additional

use of ^{99m}Tc MIBI scintigraphy in this context should allow for a more robust assessment of its clinical utility.

Acknowledgment

The patients signed informed consent.

Disclosures

None declared.

References

1. Piga M, Cocco MC, Serra A, Boi F, Loy M, Mariotti S. The usefulness of ^{99m}Tc -sestaMIBI thyroid scan in the differential diagnosis and management of amiodarone-induced thyrotoxicosis. *Eur J Endocrinol.* 2008;159(4):423-429.
2. Censi S, Bodanza V, Manso J, *et al.* Amiodarone-induced thyrotoxicosis: differential diagnosis using ^{99m}Tc -SestaMIBI and target-to-background ratio (TBR). *Clin Nucl Med.* 2018;43(9):655-662.