Image in keeping in mind

A case of extrapulmonary abnormal uptake of lung perfusion scintigraphy

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Abstract
A 74-year-old man underwent lung scintigraphy to rule out pulmonary embolism. Planar images revealed an abnormal midline uptake of $^{99m}$Tc macroaggregated alumin (MAA), which localized to several thoracic vertebrae, as revealed by single photon emission computed tomography / computed tomography. Contrast-enhanced computed tomography demonstrated stenosis of the left brachiocephalic vein for median sternotomy. By vascular stenosis, vessels to the vertebrae developed as a collateral pathway. Additionally, $^{99m}$Tc MAA was administered from the left median cubital vein in this patient.

Key words
$^{99m}$Tc MAA, thoracic vertebral uptake, stenosis of the left brachiocephalic vein

Ethical comments
Written informed consent was obtained from all individual participants included in this study in accordance with the Code of Ethics of the World Medical Association.
All procedures performed in this retrospective study were in accordance with the ethical standards of our institutional research committee and with the principles of the 1964 Declaration of Helsinki and its later amendments our comparable ethical standards.

Conflict of interest statement
Funding None.
Conflicts of interest None.
Fig. 1
A 74-year-old man underwent left upper lobe lung resection for lung cancer and then lung scintigraphy to rule out pulmonary embolism (PE). Lung perfusion images were obtained using 111 MBq of $^{99m}$Tc macroaggregated albumin (MAA). There were no segmental mismatched perfusion defects, and the scan indicated a low probability of PE. Planar images demonstrated an abnormal midline uptake of $^{99m}$Tc-MAA (arrows).
Fig. 2
Single photon emission computed tomography / computed tomography demonstrated several thoracic vertebrae. Two previous case reports have described similar findings of thoracic vertebral uptake in the context of superior vena cava obstruction [1,2]. In both cases, contrast-enhanced computed tomography revealed multiple stenoses in the upper venous system. Karls et al. reported that this finding was likely related to an increased flow phenomenon [2].
Fig. 3
Venous mild expansion was found in the left side of the thoracic vertebral uptake (arrows). Vessels to the vertebrae developed as venous collateral pathways via the increased flow phenomenon, thereby allowing the $^{99m}$Tc-MAA to flow into the vertebrae.
Fig. 4
Contrast-enhanced computed tomography revealed a stenosis of the left brachiocephalic vein (circle) but no obstruction of the superior vena cava. A possible cause of this stenosis could be that a left brachiocephalic vein was caught between the median sternotomy and the aorta with a dorsal position. The $^{99m}$Tc-MAA was administered from the left median cubital vein with a dorsal position under the influence of this stenosis, thereby increasing the blood flow to a collateral pathway.
References
