

Diphosphonate single-photon emission computed tomography in cardiac transthyretin amyloidosis

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Background: Planar diphosphonate scintigraphy is an established diagnostic tool for amyloid transthyretin (ATTR) cardiomyopathy. Characterization of the amyloid burden up to the segmental level by single photon emission computed tomography (SPECT) has not been evaluated so far.

Methods: Data from consecutive patients undergoing cardiac 99mTc-hydroxymethylene diphosphonate (99mTc-HMDP) SPECT and diagnosed with ATTR cardiomyopathy at a tertiary referral center from June 2016 to April 2019 were collected.

Results: Thirty-eight patients were included (median age 81 years, 79% men, 92% with wild-type ATTR). In patients with Perugini score 1, the most intense diphosphonate regional uptake was found in septal segments, particularly in infero-septal segments. Among patients scoring 2, the amyloid burden in the septum became more significant, and extended to inferior

and apical segments. Finally, patients scoring 3 displayed an intense and widespread tracer uptake. All patients with Perugini score 1 had LGE in at least one antero-septal, one infero-septal, and one infero-lateral segment. All patients with score 2 displayed LGE in infero-septal, inferior, and infero-lateral segments. LGE became extensive in patients scoring 3, with all patients having at least one LGE-positive segment in each region.

Conclusions: When assimilating different Perugini grades to evolutive stages of the disease, amyloid deposition seem to progress from the septum to the inferior wall and then to the other regions and from the basis to the apex. The potential of segmental analysis might be particularly relevant in patients with very limited cardiac uptake at planar scintigraphy (Perugini score 1).

