



Optimizing Imaging with Tc-99m HDP and Tc-99m PYP for Transthyretin Cardiac Amyloidosis (ATTR-CA)

Indications for Imaging

- Cardiac involvement in TTR gene carriers.
- Patients with echocardiography or CMR findings consistent with cardiac amyloidosis.
- Unexplained heart failure in elderly patients (>60 years).
- Unexplained increase in left ventricular wall thickness in elderly patients (>60 years).

Interpretation and Reporting

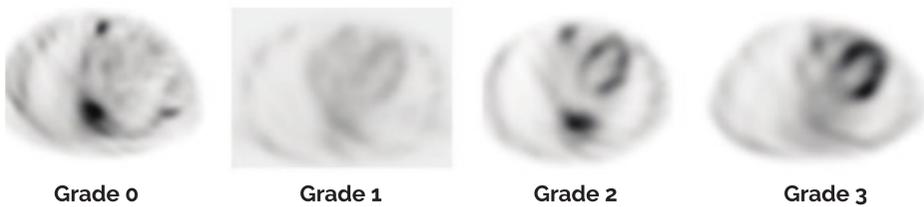


Figure 1: Perugini grades on chest SPECT.¹

- **Grade 0:** Negative. Rule out light chain disease (AL).
- **Grade 1:** Abnormal. Can be observed in AL or may reflect early ATTR-CA. Endomyocardial biopsy should be considered if clinically appropriate.
- **Grade 2 or 3:** Abnormal. Consistent with ATTR-CA, **ONLY IF** no evidence of AL.

Important Considerations

- SPECT must be performed in all studies.
- Chest reconstruction is required for grading on SPECT.
- **Grade 1** uptake can be present in ATTR-CA and must be reported as being abnormal.
- A small proportion of patients with AL can present with any degree of tracer uptake.
- Non-diffuse tracer uptake is common and may suggest early disease (**Figure 2**).

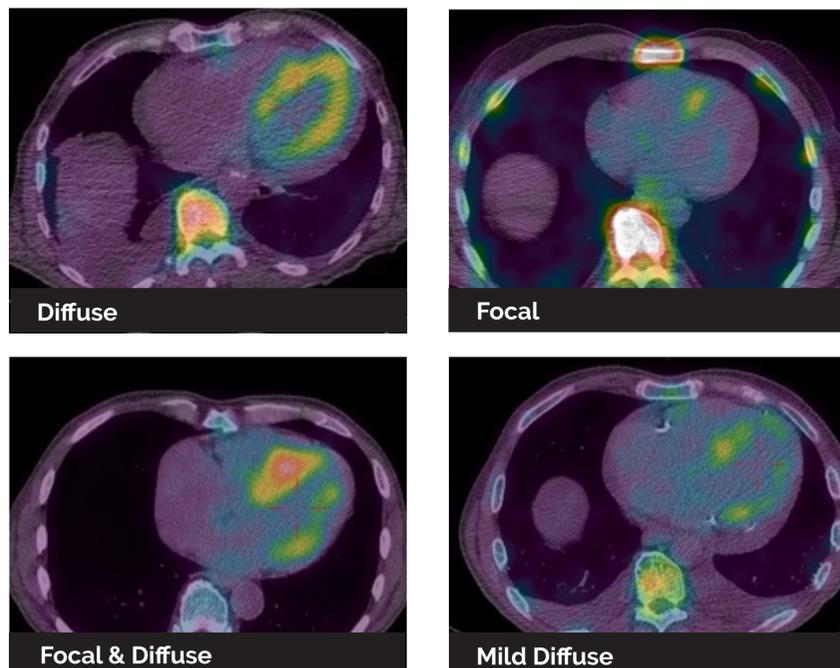


Figure 2: Patterns of myocardial tracer uptake on Tc-99m PYP SPECT/CT.²

Tracer Kinetics

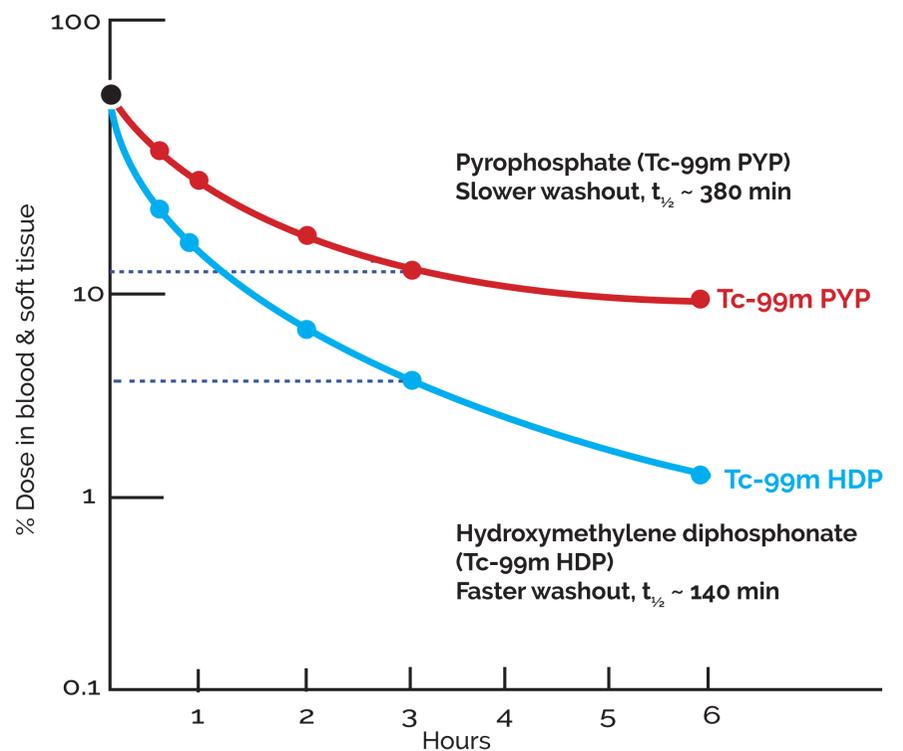


Figure 3: Blood and soft tissue clearance of Tc-99m PYP and Tc-99m HDP. Adapted from Delacruz et al. 2020.³

Tracers: Similarities and Differences

- Dose: 15-20mCi for Tc-99m HDP and Tc-99m PYP.
- Tc-99m HDP and Tc-99m PYP have similar diagnostic accuracy in a cohort of biopsy proven ATTR-CA without AL.
- Tc-99m HDP has a faster blood pool and soft-tissue clearance resulting in changes in Tc-99m HDP visual scores between 1 and 3 hours. Consider imaging HDP at 1 hour (**Figure 4**).
- Complete myocardial washout with Tc-99m HDP is possible in cases with mild tracer uptake (**Figure 5**).

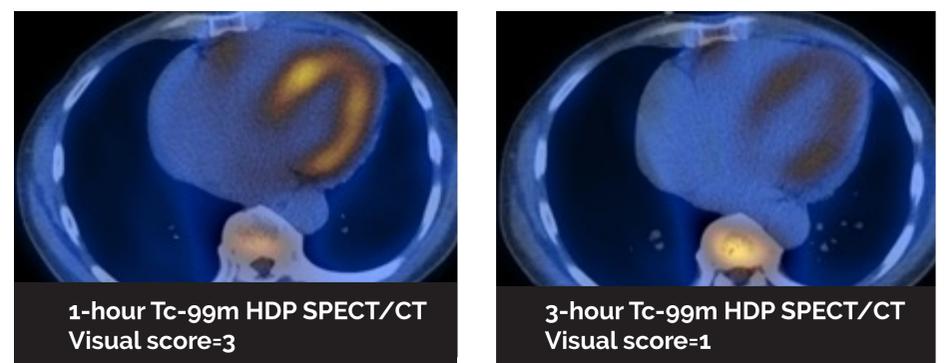


Figure 4: Washout of Tc-99m HDP between 1 & 3 hours on SPECT/CT.⁴

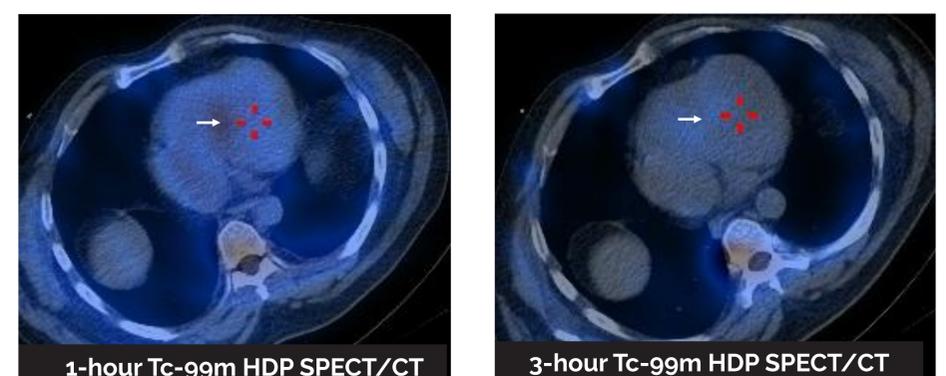


Figure 5: Washout of focal septal uptake at 3-hours (white arrow) on Tc-99m HDP SPECT/CT.⁵

