

Phase I clinical PET imaging of AL amyloid using an ^{124}I -labeled amyloid-reactive monoclonal antibody.

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AL amyloidosis is characterized by the pathologic deposition in tissue of fibrils composed of Ig light chain fragments. Presently, there are no means available in the US to image specifically these deposits and thus ascertain the presence or extent of disease. We now report the results of a Phase I E-IND designed to determine the biodistribution of a radioiodinated amyloid-reactive murine monoclonal IgG1 antibody 11-1F4 in patients with AL. Given the amyloidolytic potential of this antibody, the ultimate goal is to identify individuals that might benefit from treatment with this reagent.

GMP-grade murine mAb 11-1F4 provided by the BDP, SAIC-Fredrick was radiolabeled with I-124 to a final specific activity of 74 MBq/mg of protein. For the dosimetry portion of the study, 3 KI-treated, HAMA-negative patients were infused over 15 min with sterile, endotoxin-free ^{124}I -11-1F4 (~60-74 MBq) and PET/CT images were acquired 3 and 5 h post-infusion and again on days 2, 3, 5, and 7.

The infusions of the radiolabeled antibody were well-tolerated with a plasma $t_{1/2}$ of ~ 22 h. The dosimetry data revealed the effective dose to be 0.4 mSv/MBq. Serum specimens obtained 30, 60, and 90 days later revealed no HAMA. Notably, in 1 patient who had amyloid-laden mediastinal and abdominal lymph nodes there was striking and specific uptake of the radiotracer in these areas.

Our studies have indicated the potential use of the ^{124}I -labeled mAb 11-1F4 to identify those AL patients as candidates for passive immunotherapy using the chimeric form of mAb 11-1F4.