Does Cardiac PET Myocardial Perfusion Imaging In A Clinical Practice Change Referral For Cardiac Catheterization?

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INTRODUCTION

Cardiac PET myocardial perfusion imaging (MPI) is now being implemented in many clinical cardiology practices throughout the United States because of higher diagnostic accuracy, better image quality, lower radiation exposure, faster protocols and better patient outcomes. These features should result in more targeted post-procedure referral for cardiac catheterization and intervention with fewer false positive studies. Data regarding post-test referral patterns particularly in an office-based practice setting are minimal.

PURPOSE

The purpose of this study was to examine and compare down-stream referral for cardiac catheterization and subsequent revascularization between SPECT and PET in the same practice using a Medicare population.

METHODS

- Consecutive Medicare patients who met AUC criteria for pharmacologic stress underwent
  - Cardiac SPECT within 12 months prior to cardiac PET program **OR**
  - Cardiac PET MPI 3-15 months after initialization of cardiac PET program
- Demographics for SPECT and PET patients obtained
- All patients followed for Cardiac Catheterization and intervention within 60 days of MPI procedure
- Catheterization data obtained: percent undergoing catheterization, intervention, normal result and multivessel disease identified for both PET and SPECT
- **Statistics**: t-Test applied (two-sample assuming equal variables) to compare SPECT and PET outcomes (p <0.05 established as significant).

RESULTS

Results: 1740 SPECT patients in the 12 months preceding the PET program were evaluated; mean age 76 (range 36-96), and compared to 1322 PET patients for the first 3-15 months after program initiation (begun 3 months after initiation) mean age age 76 (range 33-96).

The patients were similar in demographics with regard to age, percentage with known CAD, and risk factors (**Table I**). Cardiac catheterization was performed in 7.18% of SPECT MPI and 6.13% of PET MPI (15% reduction, p=0.143). (**Figure 1**)

- For SPECT patients, 44 (35.2%) had no disease at catherization compared to 11 (13.6%) of the PET patients (p <0.0001). (**Figure 2**)
- For SPECT patients, intervention (PCI and CABG) was performed in 60 (48%) patients who underwent catheterization, compared to 49 (60.5%) of PET patients (p=0.0016). (**Figure 2**)
- Multivessel CAD was identified in 61% of SPECT patients and 71% of PET patients (p=0.09). (**Figure 2**)

TABLES AND FIGURES

Table 1: Comparison of Patient Profile Between SPECT and PET Patients

Variable	SPECT (n=1740)	PET (n=1322}	P value
Known CAD	55%	58%	NS
Age	75.5	75.7	NS
Gender			
- Male	55.3%	56.8%	NS
- Female	44.73%	43.17%	NS
BMI	29.2	29.1	
Risk Factors			
- Diabetes	19.80%	20.30%	NS
- Hypertension	82.70%	81.40%	NS
- Smoking Hx	7.90%	8.10%	NS
- Hyperlipidemia	80.00%	81.40%	NS

Figure 1: Referral for Catheterization after SPECT or PET MPI

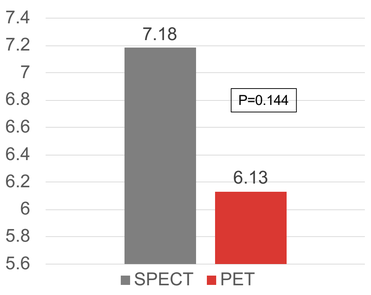
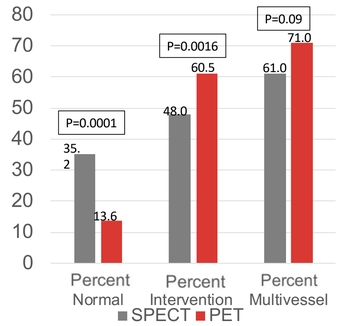


Figure 2: Cardiac Catheterization Outcomes, SPECT vs PET (%)



SUMMARY

- Fewer patients underwent cardiac catheterization after a PET MPI study than comparative SPECT MPI prior to program initiation in a similar Medicare population
- The percentage of "normal" catheterizations after PET was significantly lower than SPECT (13.6% vs 35.2%, p<0.01)
- The percentage of catheterized patients after a PET study undergoing intervention was significantly higher than comparable SPECT patients (60.5% vs 48.0%, p<0.01)
- More patients following a PET MPI study had multi-vessel CAD than SPECT Medicare population

CONCLUSION

Initiation of a cardiac PET program in a busy clinical cardiology practice leads to more targeted referral for cardiac catheterization resulting in significantly fewer normal catheterizations and a higher percentage of interventions in comparison to SPECT prior to institution of the service.

DISCLOSURES

S. Selvin is an employee of MIS

G.V. Heller is consultant to MIS, GE Healthcare, PMA Medical

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