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Safety and Accuracy of ^{68}Ga-DOTA-tyr3-Octreotide PET/CT in Children and Young Adults with Solid Tumors

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BACKGROUND: ^{68}Ga-DOTA-tyr3-Octreotide (^{6}Ga-DOTATOC) PET/CT has been shown to have high accuracy in adults with neuroendocrine tumors. This study evaluated the safety and accuracy of 68Ga-DOTATOC PET/CT in children and young adults with solid tumors that express somatostatin receptor type 2.

METHODS: A series of three prospective, IRB approved, clinical trials evaluating safety and efficacy of ^{68}Ga-DOTATOC PET/CT were conducted at the University of Iowa for subjects aged 6 months to 90 years. This study reports the results for the 26 children and young adults, ages 16 months to 29 years who participated in these trials. DOTATOC was radiolabeled with gallium-68 at the University of Iowa PET Center. Activity injected was 0.043 mCi/kg with an upper limit of 3 mCi for subjects <18 years and 4 mCi for young adults. Safety was assessed with laboratory studies and patient/parent report of symptoms before and after the scan. Scans were interpreted in consensus by two board-certified nuclear medicine physicians.

RESULTS: Nine Grade I adverse events (AEs) occurred among 26 subjects, with no serious AEs. Sensitivity of ^{68}Ga-DOTATOC PET/CT was 88% (14 true positive, 2 false negative) and specificity was 100% (10 true negative, 0 false positive).

CONCLUSION: ^{68}Ga-DOTATOC PET/CT is safe and accurate in children and young adults with solid tumors expressing somatostatin receptor type 2.