No. 265


To determine the in vivo distribution of cholinergic neuronal integrity in aging and in Alzheimer's disease, we performed cerebral SPECT using [1-123]IBVM, an analog of vesamicol which binds to the acetylcholine transporter on presynaptic vesicles. Postmortem measures of choline acetyltransferase are reduced in aging hippocampus and are markedly reduced (50-80%) in AD cerebral cortex.

We studied 34 normal subjects (ages: 20-90 years) and 8 patients with probable Alzheimer's disease (AD) (ages: 58-68 years; dementia: 4 mild, 1 moderate, 3 severe). Brain images were collected sequentially over the first 4.5 hours following injection, data were realigned and transformed to stereotaxic coordinates, and localized activities were extracted for tracer kinetic analysis. The cerebral tracer input function was determined from metabolite-corrected radial arterial blood samples. Fitted parameters reflecting transport (K1) and binding site density index (K3) were determined using a three compartment model including terms reflecting cerebral blood volume, exchange of free tracer between plasma and brain, and specific binding.

In normal subjects, K1 correlated negatively with age (p<0.05) in all gray matter sites except occipital cortex, pons and cerebellum, but K3 did not correlate with age at any site. In AD subjects, mean K3 was reduced (p<0.05) in cortex (24%) and striatum (24%), most reduced in posterior cingulate cortex (29%) and hippocampus (29%; p<0.005); and least reduced in pons (8%) and cerebellum (10%). In AD subjects, K1 and K3 decreases were similar in some zones, e.g., posterior cingulate and parietal cortex (30-33%), but differed in others; e.g., visual cortex, striatum, and hippocampus. K1 values were less reduced (13-18%) than K3 values (24-29%).

We conclude that [1-123]IBVM imaging is useful for determining patterns of cholinergic neuronal loss, which may differ from patterns of decline in cholinergic enzyme activity.

Endocrinology II: Parathyroid, Adrenal, Etcetera

3:30–5:00

Session 44

Room: 13C-D

Moderator: Jerry Glowniak, MD
Commoderator: Loraine Fig, MD

No. 268

SCINTIGRAPHIC ASSESSMENT OF DEACTIVATION OF ALDOSTERONOMA TREATED BY TRANSCATHETER ADRENAL ARTERIAL EMBOLIZATION WITH ABSOLUTE ETHANOL (TAAE). M. Nakajo, Y. Nakabeppu, N. Miyazono, H. Inoue, T. Waki, and Y. Baba, Kagoshima University Hospital, Kagoshima, Japan.

We investigated the efficacy of adrenocortical scintigraphy with 1-131-6-beta-iodomethyl-19-norcholesterol ([1-131-NCL-6]) to assess the degree of deactivation of aldosteronoma treated by TAAE, which was developed at our institution to nonsurgically deactivate an aldosteronoma by an interventional angio-logic procedure of infusion of absolute ethanol into the arteries feeding the adenoma. TAAE was performed in a total of 7 patients with unilateral aldosteronoma; once in 3, twice in 3 and three times in one. Finally, 5 were completely deactivated by this method and 2 were surgically removed. Scintigraphy was performed 7 days after i.v. injection of 37 MBq of 1-131-NCL-6 using a pinhole collimator, before and after TAAE. Before TAAE, the aldosteronoma was visualized as a hot nodule in 6 and a warm nodule in one. After TAAE, a hot or residual nodule with decreased activity was observed in 8 occasions of 5 patients in whom TAAE was unsuccessful. The hot nodule disappeared in 5 occasions of 5 patients in whom TAAE was successful and no hypersecretion of aldosterone was observed during 5-16 months. Thus adrenocortical scintigraphy is useful to estimate the viability of aldosteronoma treated by TAAE and decide the indication of further TAAE or operation.