Positron emission tomography (PET) shows reduced binding of the dopamine D(2/3) antagonist [(11)C]raclopride in striatum of withdrawn psychostimulant abusers, but not consistently in patients with alcohol dependence (AD). We make first use of the high affinity ligand [(18)F]fallypride to obtain serial measures of D(2/3) receptor availability in striatal and extrastriatal regions of AD patients undergoing detoxification. Seventeen patients (mean age 44 ± 5y) with AD and 14 age-matched healthy volunteers participated. Each patient underwent [(18) F]fallypride PET upon hospital admission, and again 1-2 weeks later; two patients achieving abstinence, and two with substantial harm reduction had additional PET follow-up at 1 year. Dynamic 180-minute PET recordings were used for volume of interest (VOI)-based and voxel-wise analysis of [(18) F]fallypride binding potential (BP(ND)). Mean baseline BP(ND) in striatum of the AD patients (15.7 ± 3.6) was unaltered during short-term follow-up, and did not differ from that in healthy controls (16.8 ± 3.0); however, BP(ND) was 10-20% lower in thalamus, hippocampus, and insular and temporal cortex of the AD patients (P< 0.05). Age-dependent declines in BP(ND) were very small in controls, but more pronounced and widespread
in the AD group. Striatal and thalamic BP(ND) increased by 30% in four patients with long-term abstinence or reduced alcohol consumption. VOI-based [(18) F]fallypride PET analyses revealed group differences in D(2/3) receptor availability primarily in extra-striatal regions. Age-related loss of dopamine D(2/3) receptors was more pronounced in AD patients. Receptor availability was unaltered by acute withdrawal, but increased in the subgroup of patients with long-term follow-up, suggesting reversibility of receptor changes.