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LINKAGE OF LIPID-LOWERING, BLOOD PRESSURE, AND ANTIDEPRESSANT MEDICATIONS WITH COGNITIVE AND IMAGING BASED MARKERS OF ALZHEIMER'S PATHOLOGY

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The effect of statins, beta blockers, selective serotonin reuptake inhibitors (SSRIs), and other drug classes on Alzheimer's pathology is not well characterized. The objective of this project was to investigate potential relationships between these drugs and certain measures reflective of Alzheimer's pathology. Participants in ongoing studies on aging and dementia from the Knight Alzheimer Disease Research Center at Washington University were selected for this analysis. Medication data was self-reported for all participants, so a string matching algorithm in R was used to correct spellings and classify drugs into different categories (statins, beta blockers, etc). These participants (~13,000) have A β and tau PET imaging, CSF, structural MRI, and clinical dementia rating (CDR) measures. APOE4 status (APOE4 allele increases risk of Alzheimer's disease), gender, and education levels were controlled for. Basic linear regressions and general linear models show that statins delay the onset of dementia associated with Alzheimer's disease, but there is no evidence to suggest that statins slow the progression of Alzheimer's pathology after onset. Additionally, no trend was found between beta blocker usage and Alzheimer's onset or progression of pathology. Genotypic analysis to investigate rates of drug usage between APOE4 carriers and non-APOE4 carriers reveals that proton pump inhibitors (PPIs) are used at a significantly lower rate among APOE4 carriers ($p = 0.00174$), and SSRIs are used at a higher rate among APOE4 carriers ($p = 0.08671$). This uneven usage may serve as a basis for further exploration of the relationship between these drugs and Alzheimer's disease.