The Relationship Between Oral Antihypertensive Medications and Intraocular Pressure

Madeline Hay¹, Ciaran Smythe¹, Zachary Hay³, Kelly Chung²

¹. Western University of Health Sciences, Pomona, CA, United States. 2. Oregon Eye Specialists, Portland, OR, United States. 3. University of Colorado Anschutz Medical Campus School of Medicine, Aurora, CO, United States.

Introduction

Research has demonstrated a positive correlation between blood pressure (BP) and intraocular pressure (IOP), although the mechanism of this relationship remains largely unknown (1). Medications used to reduce IOP generally do so by either decreasing aqueous humor production or by increasing aqueous humor outflow (2). Although there is overlap in many of the medications used to treat elevated BP and elevated IOP, the route of administration differs. Topical agents are most often used to reduce IOP, as the blood-ocular barrier limits therapeutic concentrations from being achieved in the eye with systemic administration. This study tested the relationship between oral antihypertensive agents and IOP in non-glaucomatous, non-ocular hypertensive (OHT) eyes.

Methods

We analyzed data collected at a clinic in Portland, OR between 1/1/2016-6/1/2018 (N=288). Patients over the age of 60 with no history of glaucoma, OHT, eye trauma, or use of IOP-lowering eye drops were included. Subjects taking a beta blocker (BB), angiotensin-converting enzyme inhibitor (ACEi) or angiotensinogen II receptor blocker (ARB), calcium channel blocker (CCB), or thiazide diuretic were identified and categorized by pharmacotherapy. IOP was analyzed using a one-sided analysis of variance based on medication regimen.

Results

There was no significant difference in IOP between HTN subjects and non-hypertensive subjects (p=0.9614). There was no significant difference in IOP amongst any of the four analyzed categories of antihypertensive agents (BB, ACEi or ARB, CCB, and thiazide diuretic) when compared to each other or compared to non-hypertensive subjects (p>0.95).

References