SUPPLEMENTARY MATERIAL

Methods – Older Dataset

After analysis of the current data, we also analyzed an older dataset (collected 1999-2001) previously used to study LAZ.[1,2] Although the older dataset did not contain as many variables as the current, we checked for trends similar to current data. Described elsewhere,[1,2] the old dataset was also developed by several (six) practitioners who examined consecutive patients having their pupils dilated in the same primary eye care setting. Although the old dataset had information on age, race, gender, refractive error, Goldmann IOP, LAZ, diabetes, and IOP medication use, data had not been collected on some variables that were associated with IOP in the newer dataset, i.e., education, body mass index, blood pressure, smoking, and history of cancer. Thus, the goal was not to exactly duplicate the new dataset analysis, but to determine if there was a LAZ-IOP relationship with similar direction and magnitude. IOP had not previously explored with the older dataset.

Results

A check for duplicate LAZ subjects present in the older and newer datasets revealed only one African-American female subject present in both. Thus, her data was included in the analysis. Using the available variables, we again explored factor selection using similar methods. Due to fewer subjects in the older dataset with >trace LAZ, in order to control for as many variables as possible, we restricted the analysis to African-American females and adjusted for age, refractive error, and diabetes in final models (Supplementary Table S1). Age was included because it became highly significant when

systolic blood pressure wasn't included. After model selection, we then used these same models to check the IOP-LAZ relationship using the newer dataset so that direct comparison could be made.

As shown in Table S1, there were 31 right and 31 left LAZ eyes. Using similar restriction to African-American females for the newer dataset, there were 45 right and 44 left LAZ eyes. With the older dataset, the LAZ-IOP relationship was very significant for left eyes (coefficient=1.69, P=006), however lower subject numbers reduced statistical significance for right eyes (coefficient=0.96, P=0.11). Nonetheless, the coefficients suggested a relationship between LAZ and IOP along the order of 1 mm Hg or higher among eyes with LAZ compared to eyes without. With restriction of the newer dataset to African-American females with >trace LAZ, the parameter estimates for right (coefficient = 1.16, P=0.02) and left eyes (coefficient = 1.18, P=0.03) again showed that IOP was about 1.0 mm Hg higher on average in LAZ eyes compared to non-LAZ eyes.

Also shown in Table S1, the characteristics of the LAZ and non-LAZ subjects were reasonably similar on the variables included in the models, except for a higher prevalence of diabetes among the non-LAZ subjects in the newer dataset. This is suspected to be due to improved referral patterns of people with diabetes for eye examinations.

Comment

The general observation of a LAZ-IOP association was strengthened when we tested the new dataset observations against the older. LAZ coefficient estimates near 1.0 mm Hg or higher in the older dataset analysis appear consistent with the newer.

References

1. Roberts DK, Lo PS, Winters JE, Castells DD, Alexander CC, Teitelbaum BA. Prevalence of pigmented lens striae in a black population: a potential indicator of age-related pigment dispersal in the anterior segment. Optom Vis Sci. 2002;79(11):681-7.

2. Roberts DK, Winters JE, Castells DD, Teitelbaum BA, Alexander CC. A cross-sectional study of Krukenberg spindles and pigmented lens striae in a predominately black population: two highly associated clinical signs of anterior segment pigment dispersal. J Glaucoma. 2005;14(1):57-63.

TABLE S1

[*]LAZ-IOP ASSOCIATION: OLDER vs. NEWER DATASET

USING COMPARABLE SUBJECT GROUPS AND AVAILABLE VARIABLES

	Older Dataset Acquired 1999-2001 [†]AA Females only		Newer Dataset Acquired 2011-2016 [†]AA Females only	
	Right Eyes	**Left Eyes**	**Right Eyes**	**Left Eyes**
Non-LAZ Eyes	N=1,356	1,354	1,124	1,226
[‡]Mean IOP (mm Hg)	15.5 ± 3.3	15.6 ± 3.4	15.3 ± 3.3	15.3 ± 3.4
Mean Age (years)	51.8 ± 16.8	51.7 ± 16.8	50.3 ± 15.3	50.5 ± 15.4
Mean Refractive error (D)[‖]	-0.54 ± 2.94	-0.54 ± 2.84	-0.93 ± 3.05	-0.90 ± 2.82
Diabetes	12.1%	12.2%	22.1%	22.3%
[§]LAZ Eyes	N=31	N=31	N=45	N=44
Mean IOP (mm Hg)	16.8 ± 4.5	17.9 ± 4.6	16.4 ± 3.4	16.7 ± 4.1
Mean Age (years)	66.8 ± 9.3	67.3 ± 8.0	66.4 ± 11.3	66.6 ± 10.2
Mean Refractive error (D)	1.91 ±1.86	1.47 ± 2.15	1.20 ± 1.71	1.42 ± 1.61
Diabetes	25.8%	32.3%	28.9%	27.3%

Variable	**Regression Coefficients (P-value)**			
	Older Dataset		**Newer Dataset**	
	Right Eyes	**Left Eyes**	**Right Eyes**	**Left Eyes**
Intercept	14.0	13.8	14.2	14.4
LAZ	0.96 (0.11)	1.69 (0.006)	1.16 (0.02)	1.18 (0.03)
Age (per decade)	0.25 (<0.0001)	0.31 (<0.0001)	0.10 (0.11)	0.13 (0.05)
Refractive error (per D)	-0.05 (0.11)	-0.07 (0.04)	-0.10 (0.001)	-0.08 (0.02)
Diabetes	1.37 (<0.0001)	1.28 (<0.0001)	1.04 (<0.0001)	1.11 (<0.0001)

[*]Abbreviations: AA, African-American; D, diopter; IOP, intraocular pressure; LAZ, long anterior zonule trait; mm Hg, millimeters of mercury; N, number of subjects

[†]Males and other race/ethnicity groups excluded from comparison analysis due to low number of subjects

[‡]Mean values in table include ± standard deviation values

[§]Analysis excludes eyes with trace LAZ from the older and newer datasets and any subjects using IOP-lowering medications

[‖]Spherical equivalent