

Palpebral Fissure Length in Black and Hispanic Children: Correlation with Head Circumference

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ABSTRACT. Palpebral fissure length and head circumference were measured in 170 black and 170 Hispanic normal children aged 1 month to 16 years. Eye measurement values were compared with those for white children. It was found that black children have longer palpebral fissures than whites and in certain age groups, than Hispanics. A statistically significant correlation between palpebral fissure length and head circumference was established in black children. *Pediatrics* 1985;75:318-320; *palpebral fissure length, head circumference, racial differences.*

A short palpebral fissure is one of the hallmarks of the fetal alcohol syndrome.^{1,2} Because norms for palpebral length have not been established in black and Hispanic children, we measured the length in 340 normal children and correlated it with head circumference measurements.

POPULATION AND METHODS

The study was performed over a 4-month period in the outpatient department of two city hospitals (one in East Harlem, the other in the South Bronx, New York City) on patients followed for well-baby care or minor intercurrent infections. The study population consisted of 170 black and 170 Hispanic children (mostly second and third generation Puerto Ricans, a homogenous group in the inner city). They were divided into four age groups: 1 month to 11 $\frac{3}{4}$ months, 1 year to 2 $\frac{1}{12}$, 3 years to 5 $\frac{1}{12}$, and 6 years to 15 $\frac{1}{12}$. Each group comprised

at least 20 boys and 20 girls. More than 80% of the patients had been delivered at the respective hospitals, and information related to pregnancy and nursery course was available. Offspring of drug users (including alcoholics) and patients with a history of meningoencephalitis, intracranial bleeding, mental retardation, and/or convulsions were excluded.

Measurements of the palpebral fissure were performed with a plastic ruler and a steel measuring tape, which were placed across the greatest horizontal plane of the eye, from medial to lateral canthus, with the eye open. Children more than 2 years of age were asked to look straight ahead and were assured that the eye would not be touched. All measurements were made to the nearest millimeter. The head circumference was measured by placing a steel tape just above the eyebrows anteriorly and at the maximum point of the occiput posteriorly.

RESULTS

Because there were no appreciable differences between the right and the left eye measurements, as well as between measurements obtained by ruler *v* steel tape, we analyzed the measurements together. The means and SD are presented in Fig 1. It is evident that the mean palpebral fissure is <3 cm between 1 month to 3 years and it increases to 3.1 to 3.4 cm between 3 to 16 years. It is slightly larger in black males than in black females in age groups 1 month to 1 year and 3 to 6 years. In Hispanics, a similar difference was found in the group ranging from 6 to 16 years of age.

A comparison of the two ethnic groups revealed a longer palpebral fissure in black males aged 1 month to 1 year and 3 to 6 years, as well as in black females aged 3 to 16 years *v* Hispanics. All these differences were not statistically significant. Head

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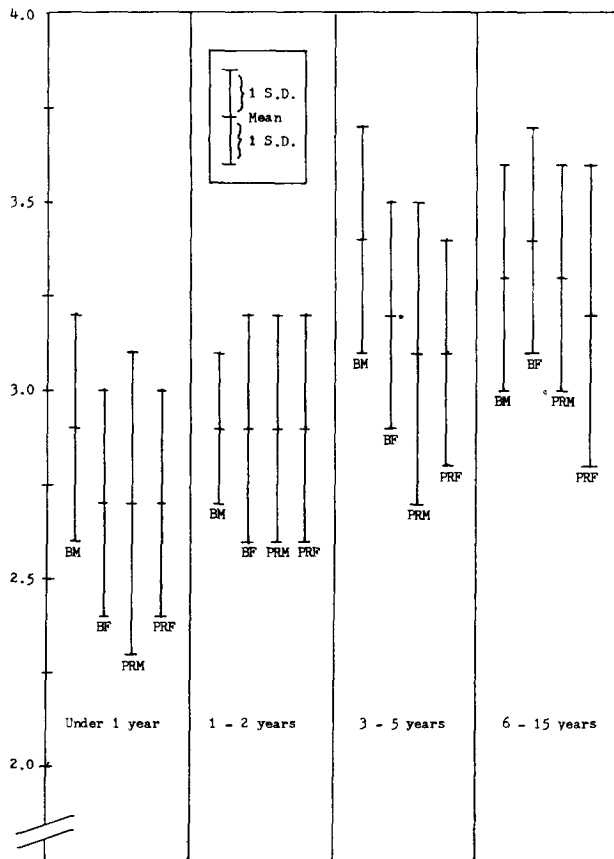


Fig 1. Palpebral fissure length in black and Hispanic children. Abbreviations used are: BM, black male; BF, black female; PRM, Puerto Rican male; and PRF, Puerto Rican female.

circumferences were largest in black males in all age groups (Fig 2).

A statistically significant (χ^2 , $P = .05$) positive correlation was found between head circumference and palpebral fissure length in black males 1 to 16 years and black females 1 month to 3 years and 6 to 16 years of age. A similar correlation was present in the groups aged 1 month to 1 year and 6 to 16 years in Hispanic males and in Hispanic females less than 1 year of age.

DISCUSSION

Data on palpebral fissure length, published in ophthalmology textbooks,^{3,4} are based on measurements in whites. Wolff³ gives a mean length of 24 to 25 mm for infants and 28 to 30 mm for adults (no data on children). Duke-Elder⁴ established a progression from 19.90 mm at 1 to 6 months of age to 28.40 mm at age 16 to 18 years. In a study of private and clinic patients 3 weeks to 93 years of age, Fox⁵ found a palpebral fissure length <30 mm for those patients aged less than 11 years and no appreciable differences between whites and blacks,

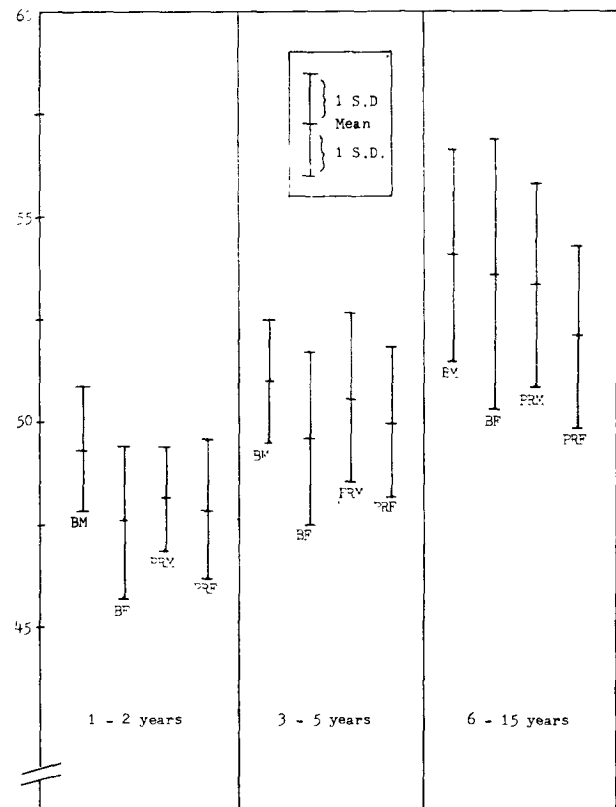


Fig 2. Head circumference in black and Hispanic children. Abbreviations are defined in Fig 1 legend.

males and females. Fox stated that the increase in length is rather rapid in the first decade (from 18 to 29 mm) and minimal thereafter. It is noteworthy that most patients in his study were between 11 and 60 years of age. No mention was made about the number of blacks and whites in different age groups.

Our data show that black children have longer palpebral fissures than white children, with a mean of 3 cm reached by age 3 years (*v* adulthood in whites). In certain age groups, black children also have longer fissures than Hispanic children. This confirms the findings of Fuchs et al,⁶ who established that black newborns have longer palpebral fissures than Hispanics and whites (means of 2.00 cm for blacks, 1.95 for Hispanics, and 1.85 cm for whites). Differences in fissure length between sexes were found mostly in black children.

A statistically significant positive correlation was noted between palpebral fissure length and head circumference in most black children, but in only a minority of Hispanic children. Further large-scale anthropometric studies might explain these genetic differences.

We conclude that race should be considered when interpreting anthropometric data and before labeling a palpebral fissure "normal."

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