Normal trans-bulbar Optic Nerve Sheath Diameter in Indian children and its determinants

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Background: Optic nerve sheath diameter (ONSD) is an indirect method of detecting raised intracranial pressure. There is paucity of literature on normal values of ONSD particularly for Indian children.

Methods: Normal healthy children between ages 1 month-14 years were selected by systematic random sampling. ONSD were recorded by trans-bulbar sonography of right eye, three mm behind the globe by measuring the maximal transverse diameter. Average of three best possible observations was taken as final reading. Age, gender, height, weight, and head circumference were recorded for all children to see any association between these and ONSD.

Results: A total of 45 healthy children (males=25) were included in the study. The mean age was 7.9 years. The ONSD was normally distributed as evaluated by Shapiro test (p value-0.15). The 3rd, 15th, 50th, 85th and 97th centiles for ONSD were 4.3, 4.7, 5.3, 5.7, and 6.3 mm respectively. There was no significant difference in ONSD of two sides (t= -0.3, p value-0.76) or on basis of gender (t=0.08, p value-0.93). The correlation between ONSD and age, height, weight, head circumference was 0.36, 0.36, 0.46, 0.39 respectively.

Conclusion: The normal values of ONSD are 5.1 mm and measurements above 6.3 mm should be considered abnormal. The factors like age, weight, and height and head circumference are poorly correlated and cannot predict ONSD accurately.