



Determination of Normal Values of Optic Nerve Sheath Diameter in Turkish Adult Population Using Magnetic Resonance Imaging

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Objective

The measurement of optic nerve sheath diameter (ONSD) is a reliable tool for the estimation of increased intracranial pressure (ICP). However, it is known that racial changes can occur in human anatomy. In the present study we aimed to determine the normal values of ONSD in Turkish adult population.

Material and Methods

This retrospective study involved the collection of data between June 1, 2015 and May 31, 2019, and was conducted on 291 adults known to have no increased cranial/intraocular pressure. The ONSD was measured at 3 mm posterior to the globe on MR images.

Results

291 subjects were enrolled, 63.6% of whom were female. The total median ONSD was 4.40mm (4.20 - 4.70). The median ONSD of the male participants was 4.50mm (4.25-4.75), of the female participants was 4.35mm (4.15-4.50) and the difference was statistically significant (p = 0.001). According to statistical analysis, it was found that only the presence of chronic renal failure altered the median of ONSD among the comorbid diseases (p = 0.042).

Table 2. Primary outcome measures

	Median (%25 - %75 IQR)	p
Right ONSD (mm)	4.40 (4.20 - 4.70)	0.319
Left ONSD (mm)	4.30 (4.10 - 4.60)	
Total ONSD (mm)	4.40 (4.20 - 4.70)	

ONSD: Optic nerve sheath diameter; IQR: Interquartile range; mm: millimeter

Table 1. Descriptive characteristics of the patients

Age [Median (%25 - %75 IQR)]	41 (30-52)
Gender (Female) [N (%)]	185 (63.6)
Comorbidities [N (%)]	
Diabetes Mellitus	34 (11.7)
Hypertension	48 (16.5)
Coronary Artery Disease	12 (4.1)
Hyperlipidemia	24 (8.2)
Chronic renal failure	3 (1)
Malignancy	3 (1)
Ischemic Stroke	1 (0.3)
Chronic obstructive pulmonary disease	21 (7.2)
Geographical region where the patient ID is registered [N (%)]	
Aegean	6 (2.1)
Marmara	55 (18.9)
Black Sea	115 (39.5)
Mediterranean	4 (1.4)
Central Anatolia	41 (14.1)
Southeastern Anatolia	7 (2.4)
Eastern Anatolia	63 (21.6)

Conclusion

Monitoring and treating increased ICP is crucial. Thanks to an ONSD with a known normal value, recognition and emergency management of this pathology would be easier. We think our study is noteworthy because it is the first study investigating the normal ONSD value in Turkish adult population.

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