Full-field perimetry for evaluation of glaucomatous (presumed) cup

Sir,

We read with interest the article, “Cupped disc with normal intraocular pressure” by Choudhari et al. In this regard, we would like to highlight the following points.

It is unfortunate that in day-to-day practice, excessive cupping of the optic disc is considered to be pathognomonic of chronic glaucoma. Diagnosis of normal tension glaucoma (NTG) should be by exclusion. Intraocular pressure (IOP) varies an average of 3–6 mmHg in normal individuals over the course of the day. Probably, the modified diurnal curve is practical while still providing useful information to diagnose glaucomatous optic neuropathy. Office diurnal curve generally means checking the pressure every 1 or 2 h from about 8 am to 6 pm. In most cases of NTG, the IOP’s cluster at the upper end of the normal range (18 or 19 mmHg) and show wide diurnal variation. Initial IOP less than 17 mmHg and rapidly progressive course despite apparently adequate glaucoma treatment is indicative for workup to rule out systemic disease (neurological, cardiac, carotid, anemia).

In certain invasive pituitary lesions affecting the optic chiasm or tract, the initial or follow-up fields give more information beyond the 30° isopter. Five percent of pituitary tumors present with peripheral field changes and normal central fields. In craniopharyngiomas, rupture of the cyst may cause fluctuating visual field loss. Therefore, a full-field perimetry may help to differentiate neuroophthalmic field loss from glaucomatous field loss. Altered appreciation of color in one or both temporal fields and diplopia with normal ocular movements have been documented in pituitary tumors.

Headache (new onset or increased severity), localizing neurologic symptoms other than migraine and neurologic visual abnormalities are relative indications to perform neuroimaging evaluation in normal tension glaucoma. Craniopharyngiomas cause visual symptoms, endocrinological disturbance, headache and cognitive deficits, including personality changes, memory loss, depression and confusion. Hirsutism, frontal bossing, prominent jaws and acromegaly are endocrinological manifestations of hormone-secreting pituitary tumors.

There is a subgroup of patients with opticochiasmal pathology who appear more visually impaired than expected from their clinically recorded visual parameters. In particular, at monocular visual acuity testing, the patients only identify the symbols on the nasal side of the test chart, even though they know that there is a full line present and, despite being prompted to correct on repeated testing, a disability to locate the temporal symbols persists. Some patients also lose the ability to read the test smoothly or to appraise a single line of print. This condition is known as monocular temporal inattention. Alzheimer’s and Parkinson’s disease can also cause retinal nerve fiber layer loss. Probably higher cortical function testing may help to identify coexisting neurological disorder in glaucoma patients.

We agree with the author’s recommendation that a comprehensive clinical examination is necessary to rule out neurological and systemic disease causing glaucomatous (presumed) cup. We appreciate the author’s effort and research work.

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The author has used standardized difference in the solution of problems B and C in the article. However, the author wrote $d = 0.80$ which should be $d = 0.20$. In the description of data, the author wrote $1.00$ which should be $0.10$ not $0.80$. Similarly, in Problem A, the probability of failing to reject a false null hypothesis ($10\%$ power but $90\%$ power) in the description of data, the author wrote $Z_{\alpha/2} = 1.28$; for $Z_{\beta} = 0.20$, $Z_{\alpha} = 1.645$.

In formulas and their description given by the author, the principle of sample size calculation and formulas to determine adequate sample size have been explained for testing the hypothesis for single mean, two means and two proportions. However, there are many lapses in formulas and their description given by the author. Correct formulas for comparing the two means per group for comparing the two population means: however, the standard deviation (SD) of the population, assuming both the populations or pooled variance and for comparing the two proportions are in Table 1.

The principle of sample size calculation and formulas to determine adequate sample size have been explained for testing the hypothesis for single mean, two means and two proportions. However, there are many lapses in formulas and their description given by the author.

Thanks for writing a nice editorial on the importance of sample size calculation and formulas to determine adequate sample size in medical research.

Sample size calculation

This type of articles would certainly provide basic inputs to the researchers and the clinicians.

The article by Gogate was written with the purpose of initiating interest amongst the readers.