

Original Article

Evaluation of Optic Nerve Head Examination in a Resident Based Hospital

Maryam Yadgari ^{*1}, MD; Mina Dargahi ¹, MD; Akram Ali Rezaee ¹, MD; Feras Alesmail ¹, MD; Ali Reza Haghi ¹, MD; Arezoo Astaraki¹, MD

1. Eye Research Center, Rassoul Akram Hospital, Iran University of Medical Sciences, Tehran, Iran

Corresponding author: Maryam Yadgari

Email: Maryam.yadgari@yahoo.ie

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Abstract

Purpose: To evaluate the accuracy of glaucomatous optic neuropathy diagnosis in a resident based hospital.

Patients and Methods: Four hundred twenty eyes of 210 patients underwent ocular examination including intra ocular pressure and optic nerve head measurements by third and fourth year residents and suspect cases were referred to a glaucoma specialist for validation. After reevaluation by the specialist a comparison between these two examination results was performed to evaluate the overdiagnosis of disease by residents. **Results:** In this prospective study, eighteen eyes out of 420 evaluated eyes were diagnosed as either glaucoma suspect (14 eyes) or glaucoma (4 eyes) by residents. After reevaluation by the glaucoma specialist only one eye had suspect optic nerve head which was referred for optic nerve head imaging. All other eyes had normal optic nerve head and retinal nerve fiber layer in examination by the specialist.

Conclusion: The results of the present study indicate a high rate of glaucomatous optic neuropathy overdiagnosis by third and fourth year ophthalmology residents. Further studies are needed to find if this overdiagnosis is related to poor training or anxiety among residents to miss a real case of glaucoma.

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Introduction

Adequate training for clinical examination of the glaucomatous optic disc is fundamental in prevention of optic neuropathy and resultant blindness. Optic disc and nerve fiber layer assessment should be performed according to a systematic approach that includes the evaluation of optic disc size, rim shape and area, presence of retinal nerve fiber layer loss, peripapillary atrophy and retinal or optic disc hemorrhage¹.

The comparison of parameters with the opposite eye is also helpful, but optic disc size and shape should always be considered¹. The aim of the present study was to evaluate the accuracy of glaucomatous optic neuropathy diagnosis by third and fourth year residents compared to diagnosis by a glaucoma specialist as the gold standard.

Patients and Methods

Four hundred and twenty eyes of 210 participants were evaluated in this prospective study. Inclusion criteria were age more than 40 years and the presence of any sign of increased IOP. The exclusion criteria were a history of any form of glaucoma, anti-glaucoma medication usage, and a history of ocular surgery except for uncomplicated cataract surgery. The present study was approved by our institutional ethical committee and all participants gave a signed informed consent before entering the study. Age, sex, past medical history, past ocular history and family history of glaucoma were recorded after interviews with volunteers. Then the IOP measurement and optic nerve head examination with handheld 78 plus lens were performed by third and fourth year residents in the ophthalmology clinic of Rassoul Akram hospital, Tehran, Iran. The suspect suspect cases diagnosed by residents were referred to

a glaucoma specialist attending in this hospital for reevaluation.

Results

The mean age of participants was 54.1 ± 10.1 years (range 40 to 92 years). Of those entering the study 56.79 % were male, 12.5 % had diabetes mellitus, 16.1 % had systemic hypertension, and 4.16 % had a positive family history of glaucoma. The mean intraocular pressure was 13.3 ± 2.45 mm Hg (Range 10 to 28 mm Hg). According to residents' examination 14 eyes were diagnosed as glaucoma suspect due to suspect glaucomatous optic nerve head. In examination by the specialist, among these 14 eyes, 5 eyes were diagnosed as having large disc, 4 eyes as tilted disc, 2 eyes as optic atrophy and 2 eyes as physiologic large cup with normal thickness of nerve fiber layer, and only one eye was diagnosed as glaucoma suspect disc which was referred for more evaluation using peripapillary optical coherence tomography of retinal nerve fiber layer. Also 4 eyes were diagnosed by residents as glaucomatous eyes. In specialist examination of these four eyes all of them were diagnosed as ocular hypertension with normal optic nerve head and retinal nerve fiber layer.

Discussion

Optic disc evaluation is an essential part of ocular examination and is a sensitive method for diagnosis of glaucoma and monitoring its progression^{2, 3}. Clinical examination of the optic disc requires specific training. Digital imaging technology cannot replace an ophthalmologist's examination of the optic disc or stereoscopic optic disc photographs⁴. Furthermore, digital imaging technologies may not be widely available. It has been shown that a certain percentage of ophthalmic care providers are not performing and/or

interpreting examination of the optic nerve correctly, which may indicate lack of skill or confidence^{5, 6}. In the present study we found overdiagnosis of glaucomatous optic neuropathy in a resident based hospital. The majority of cases diagnosed by third and fourth year residents were in fact large, tilted, or atrophic discs or had less frequent normal variations of optic nerve head features. We also had 4 eyes with pure ocular hypertension that were misdiagnosed by residents as glaucomatous eyes, which might be due to lack of skill or confidence in optic nerve head examination among residents.

Ideally, competency in optic disc evaluation should be acquired during residency training in ophthalmology. However, there is no uniform method across training programs to teach optic nerve head and retinal nerve fiber layer examination or to assess competency after training⁷. It seems that a systematic and organized module for glaucoma diagnosis education focusing on unusual features of optic nerve head is necessary in resident based hospitals.

Limitations of the present study were small sample size and lack of evaluation of other aspects of glaucoma diagnosis such as gonioscopy. Also we only focused on overdiagnosis of glaucoma and did not evaluate possibility of missed diagnosis by residents. We suggest future prospective studies with a larger sample size to further evaluate the over and under diagnosis of glaucoma among residents, with more attention to probable causes of these diagnostic failures. The results would be beneficial in development of more robust training methods for optic disc evaluation by residents.

Conclusion

The results of the present study indicate a high rate of glaucomatous optic neuropathy overdiagnosis by third and fourth year ophthalmology residents. Further studies are needed to find if this overdiagnosis is related to poor training or anxiety among residents to miss a real case of glaucoma.

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Footnotes and Financial Disclosures

Conflict of interest:

The authors have no conflict of interest with the subject matter of the present manuscript.