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Is Prevention of Glaucoma Possible in Bosnia and Herzegovina?

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ABSTRACT

Introduction: Glaucoma is the second leading cause of blindness in the world and represents a significant social and health problem. Early detection of glaucoma enables early initiation of treatment and may delay disease progression. The aim of this work is to determine whether it is possible to detect glaucoma in early stages. **Methods:** A public awareness campaign was carried out in University Clinic Center (UCC) in Tuzla, Bosnia and Herzegovina (B&H) during 2012, 2013, 2014 and 2015 Glaucoma Week, with one-day, free of charge screening of individuals. This screening program was composed of getting brief medical history, slit-lamp examination including intraocular pressure and anterior chamber dept evaluation and non-mydriatic fundus exam with evaluation of the cup/disk ration. **Results:** A total of 682 individuals were screened, 277 were male and 405 were female. The youngest individual was 8 years old and the oldest individual was 84 years old. The mean age was 57.6 years. Intraocular pressure higher then 21,9 mmHg was found in 83 patients. **Conclusion:** Glaucoma is a disease that affects visual acuity and gradually leads to blindness. It occurs in all age groups in both sexes and in all races. Early detection of disease and proper treatment can prevent permanent loss of vision. Detection and early treatment of glaucoma must become one of the leading public health programs in B&H.

Key words: glaucoma, screening, prevention.

1. INTRODUCTION

Glaucoma is the second leading cause of blindness in the world and represents a significant social and health problem. Glaucoma is a chronic progressive optic neuropathy, in which the rate of change of structural and functional abnormalities varies greatly from patient to patient (1, 2). Early glaucoma detection and treatment are currently the only known methods for preventing blindness and low vision resulting from this frequently asymptomatic disease (3). There are many different forms of glaucoma, all characterized by progressive loss of vision associated with increased intraocular pressure (IOP) and subsequent deterioration of the optic nerve. Open-angle glaucoma is the most common type of the disease and a leading cause of blindness, affecting more than 60 million people worldwide (4).

Because of the relatively asymptomatic initial phase of the disease glaucoma is often detected by chance (5). According to epidemiological studies, at least half of subjects with glaucoma are unaware of their disease (6). In most countries glaucoma is usually detected by opportunistic case finding without systematic mass screening programs. Glaucoma screening in Bosnia and Herzegovina (B&H) has never been described before. Currently literature shows that only 50% of glaucoma cases are identified, suggesting that about 50% are completely undiagnosed (7).

2. METHODS

A national public awareness campaign was carried out in University Clinic Center (UCC) in Tuzla B&H, during the World Glaucoma Week of 2012, 2013, 2014 and 2015, culminating each year in a one-day,

free-of-charge screening of individuals. Screening was performed by four ophthalmologists and two residents of 4th year of ophthalmology. It comprised a brief medical history, slit-lamp examination including intraocular pressure and anterior chamber depth evaluation, and non-mydratic fundus exam with evaluation of the cup/disk ratio. Both eyes were examined in each case. All individuals interested in free-of-charge screening were examined. Cases with prior diagnosis of glaucoma or ocular hypertension were excluded. The results and their meaning were explained to the screened individuals upon completion of the examination. Fundus examination was done with direct/indirect ophthalmoscopy and as well 78D and 90D lenses to see for glaucomatous nerve damage. If one or more of the following characteristics were present, the screening was considered positive: a) IOP higher than 21,9mmHg; b) vertically elongated cupping of the optic disc; c) localized narrowing of the optic disc rim, or d) localized nerve fiber layer defects.

Patient who screened positive were invited for further examination at UCC Tuzla, Department of Ophthalmology. This was performed by an experience ophthalmologist and included determination of refraction, tonometry, slit-lamp examination (recording the presence of pseudoexfoliation), ophthalmoscopy with a evaluation of cup and disk ratio (C/D), Goldmann visual field perimetry to check for any characteristic visual field loss and to ascertain the potential stage of glaucoma and as well OCT scanning. Gonioscopy was performed in a routine manner using the Goldmann two-mirror lens. The diagnosis of glaucoma was confirmed by a glaucoma specialist on the basis of the clinical details and established glaucomatous visual field defects in each eye. For the purpose of this work, primary open angle glaucoma (POAG) was defined as the presence of elevated IOP and /or glaucomatous disc changes in the presence of typical glaucomatous field defects, an open angle on gonioscopy and no evidence of a secondary cause. The diagnosis of ocular hypertension was made based on an IOP >21 mmHg, absence of glaucomatous disc features, no demonstrable glaucomatous field defects and open angles with no evidence of a secondary cause (8).

3. RESULTS

A total of 682 individuals were screened, 277 were male and 405 were female (Table 1). The youngest individual was 8 years old and the oldest individual was 84 years old. The mean age was 57.6 years. Intraocular pressure ranged between 10,1 mmHg- 40 mmHg. Intraocular pressure higher than 21,9 mmHg was found in 83 patients. Intraocular pressure higher than 25,9 mmHg was found in 41 patients. Further ophthalmological examination was recommended to 41 patients. Cupping $C \geq D$ 0,5 was found in 9 patient with IOT higher than 25,9 mmHg, while cupping $C \geq D$ 0,7 was found in 5 patients. From 41 patient with IOT higher than 25,9 mmHg confirmed POAG was in 14 patient. All these patients received adequate antiglaucoma drugs. Diabetes was reported by 181 of the screened individuals, among them 126 were females and 55 were male. Arterial hyperten-

YEAR	PATIENTS	MALE	FEMALE
2012	135	60	75
2013	177	74	103
2014	180	65	115
2015	190	78	112
TOTAL	682	277	405

Table 1. Total number of screened individuals

sion was reported by 210 of the screened individuals, among them 139 were female and 71 were male. With IOT higher than 21,9 mmHg 10 of patient reported that uses oral therapy for diabetes mellitus while 24 reported that is using oral therapy for arterial hypertension. Among screened patient with IOT higher than 21,9 mmHg, 20 of them reported having somebody at family with diagnosed glaucoma.

4. CONCLUSIONS

As this is a first report of this kind in B&H, this report mainly focus on the ability of detected undiagnosed glaucoma. Currently awareness of glaucoma in B&H is very low. The major source of awareness of glaucoma in the Bosnian population is TV/magazines and other media followed by information from a relative or friend suffering from the glaucoma. We hope to improve a screening for glaucoma in our country. The main objective of the screening was to recruit patients with newly detected glaucoma. Currently much effort is invested in screening for glaucoma. Glaucoma awareness needs to be increased through better education of Bosnian population. We strongly believe that new screening models need to be develop that will be effective in developing country such as B&H. In developing countries the risk of blindness from glaucoma is highest. It has been reported that glaucoma patients have little understanding of their disease and its treatment (10). That's why we emphasize mostly on public education regarding glaucoma. As a medical doctors we are responsible on patient education and we are here to help them learn about their health.

- **Competing interest:** none to declare.

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