

Factors Associated with Open-Angle Glaucoma among Iraqi Patients

العوامل المرتبطة بداء الزرقاء ذو الزاوية المفتوحة بين المرضى العراقيين المصابين بداء الزرقاء

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الخلاصة:

خلفية البحث: داء الزرقاء سبب مؤدي للعمى في انحاء العالم حوالي 22.5 مليون شخص يعانون منه , داء الزرقاء ذو الزاوية المفتوحة اكثر انتشارا من داء الزرقاء ذو الزاوية المغلقة. العمى ممكن الوقاية منه اذا عولج داء الزرقاء مبكرا.

الهدف: تحديد اهم عوامل خطورة داء الزرقاء ذو الزاوية المفتوحة بين المرضى المصابين في مستشفى اليرموك التعليمي.

المنهجية: طريقة الدراسة اجريت هذه الدراسة المقطعية في مستشفى اليرموك في بغداد بين كانون الثاني 2013 الى تموز 2014 لمرضى داء الزرقاء الذين اعمارهم اكثر من 35 سنة ولكلا الجنسين تم تشخيص داء الزرقاء من قبل طبيب العيون الاخصائي معتمدا على الاكاديمية الأمريكية لطب العيون لعام 2012, تم الحصول على البيانات من المقابلة الشخصية للباحث مع المرضى المصابين بداء الزرقاء واعتمادا على استمارة الاستبيان, البيانات شملت: العمر, الجنس, التاريخ العائلي, قياس ضغط العين, قصر البصر, التدخين, تاريخ الاصابة بضغط الدم, الإصابة بالسكري, واستخدام ادوية الستيرويد تم احصاء البيانات باستخدام النظام الاحصائي SPSS.

النتائج: شملت الدراسة 150 مصاب بداء الزرقاء ذو الزاوية المفتوحة تقريبا نصف المصابين اعمارهم فوق 65 , وجدت الدراسة ان نسبة داء الزرقاء تزداد عند المصابين بازدياد ضغط العين اكثر من 20 ملم زئبق (92%) قصر بصر 65%, تاريخ عائلي 72% تاريخ ضغط الدم 63% وداء السكري 53% وتعاطي الادوية 59% والتدخين 52%.

ووجدت علاقة احصائية مع ضغط العين وقصر البصر والتاريخ العائلي وتاريخ الاصابة بضغط الدم واستخدام ادوية الستيرويد ولا توجد علاقة احصائية مع السكري والتدخين.

الاستنتاج: اظهرت الدراسة ان كبار السن, الضغط داخل العين, قصر البصر, التاريخ العائلي لداء الزرقاء, تاريخ الاصابة بارتفاع ضغط الدم وتعاطي ادوية الستيرويد, هم عوامل خطورة للاصابة بداء الزرقاء.

التوصيات: التثقيف الجماهيري حول عوامل الخطورة المرتبطة لداء الزرقاء والفحص الروتيني لضغط العين لكبار السن والمصابين بضغط الدم والسكري

الكلمات المفتاحية: داء الزرقاء ذو الزاوية المفتوحة, الضغط داخل العين, قصر البصر.

Abstract

Back ground: Glaucoma is the leading cause of blindness world wide and 22.5 million people are estimated to suffer from it. Open angle glaucoma is more prevalent form of glaucoma than closed angle glaucoma blindness can be avoided if glaucoma treated early.

Objectives: There are many factors associated with open angle glaucoma this study is performed to assess The most important factors that associated with open angle glaucoma among Iraqi patients who had glaucoma attending AL-Yarmook teaching hospital

Methods: Across sectional study was conducted at AL-Yarmook hospital in Baghdad from October 2013 till June 2014 one hundred fifty 150 glaucomatus patients age >35 years both sexes were included in this study .open Angle glaucoma was diagnosed by ophthalmologist depending on the American Academy of Ophthalmology 2012 the data were obtained by using an interview questionnaire that was applied to patient with open angle glaucoma. The data include the age, sex, family history and clinical data which include intra ocular pressure ,Myopia, smoking, history of hypertension, diabetes and using systemic drugs as corticosteroid the data was analyzed by SPSS.

Results: The study included 150 patients with open angle glaucoma. almost half of the patients were above 65 years, the rate of open angle glaucoma is more in those who have I.O.P.>20 mm Hg(92%), myopia 65%, family history 72%, history of hypertension 63%, history of diabetes 53%, history of taking steroid 59% and smoking 52%. Open angle glaucoma was significantly associated with intra ocular pressure 0.0001, myopia P0.001, family history 0.0005, history of hypertension 0.001, and history of taking steroid 0.01. it show that there is no significant association with history of diabetes and smoking (P 0.1,0.2) respectively.

Conclusion: This study show that old age, intra ocular pressure, Myopia, family history, history of hypertension and history of taking steroid are risk factors for open angle glaucoma.

Recommendation: education of the people about risk factor associated with glaucoma and routine checking of I.O.P for old age and patients with hypertension and diabetic

Keywords: open angle glaucoma, intra ocular pressure, Myopia.

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INTRODUCTION

Primary open angle glaucoma (OAG) is progressive chronic optic neuropathy in adults in which intraocular pressure (IOP) and other factors are contributed to the damage optic nerve. It is characterized by late presentation and absence of pain which is a driving force for seeking medical help⁽¹⁾. Glaucoma is the leading cause of blindness world wide and 22.5 million people are estimated to suffer from it⁽²⁾. The highest prevalence of primary open angle glaucoma (POAG) occurs in Africans⁽³⁾.

More recently, the Nigerian National Blindness and Visual impairment Survey has shown that the cause specific prevalence of blindness due to glaucoma was 0.7% second to cataract with 1.8%, and glaucoma blindness covers all the six geopolitical zones of the country though slightly higher in the south eastern part of the country⁽⁴⁾.

Institution-based studies have also indicated the importance of glaucoma as a cause of blindness. A study in India confirmed glaucoma in 2.7% ⁽⁵⁾. Considering the challenge of identification and management of glaucoma on one hand and the deficit in human and material resources on the other hand; there is huge responsibility for caring of those who have glaucoma ⁽⁵⁾.

There is good evidence that high intra ocular pressure IOP history are the main risk factors for POAG and various population studies of glaucoma have shown that high intraocular pressure (IOP), has been considered a main remarkable feature of POAG^(6,7,8,9,10,12,13,14,15,16)but it is not always observed in POAG patients thus some time patients had normal I.O.P.⁽¹¹⁾

open-angle glaucoma is a disease that develops later in life; therefore, the result that age was a significant risk factor for having POAG is no surprise at all and is compatible with many results ⁽⁶⁻⁷⁾ Family history, as recent understanding of specific associations between genes and glaucoma increases, family history of glaucoma has been known to be associated with POAG ^(12,13) .

Myopia has been associated with OAG in many study ^(6,7,8,14).

Many studies found that history of hypertension^(6,15),diabetes ^(7,16)and using systemic drugs as corticosteroid ^(6,7) Were found as risk factors for O.A.

PATIENT AND METHODS

This cross sectional study was conducted on 150 patients had open angle glaucoma attending AL-Yarmook hospital in Baghdad between October 2013 and June 2014 These

patients were diagnosed by an ophthalmologist in the same hospital the diagnosis was based on the American Academy of Ophthalmology 2012 (AAO)(17), socio-demographic clinical data were obtained by using an interview questionnaire that was applied to patient with open angle glaucoma .the data include sociodemographic characters like age, sex and clinical data which include I.O.P(>20 mmHg was considered as acute point according to International Council of Ophthalmology ICO(18) Myopia which were measured by trained optometrists, history of hypertension, diabetes (defining hypertension and diabetes by specialist doctor or the reported taking of medication for them)and using systemic drugs as corticosteroid and smoking were taken by the researcher.

Statistical analysis was carried out using the Statistical Package for Social Sciences (SPSS, version 11.5).chi square for association between two variables P value 0.05 was considered as significant.

RESULTS:

Table 1 : The distribution of the study sample according to age and sex

Age / years	No of male	%	No of female	%	Total	%
35-45	6	7.32	5	7.35	11	7.35
46-55	12	14.64	8	11.76	20	13.34
56-65	31	37.80	22	32.36	53	35.34
>65	33	40.24	33	48.53	66	44
total	82	100	68	100	150	100

Table 1 shows that the number of the patients increased with age of the study sample about half of the patients with O.A.G 44% who were >65 years (33female,33 male) followed by the age 46-55 ,35.34%(22female -31 male).13.34%(8 female,12 male) for the age 46-55 and only 7.35% for the age 35-45years.

There is significant association between open angle glaucoma O.A.G and age(P 0.002) there is no significant differences between female and male in this study(P 0.2)

Table 2 :The clinical characteristics among the study sample.

variable	No of patients	%	P value
intraocular pressure mm Hg I.			
>20	138	92	
<20	12	8	
total	150	100	0.0001
Myopia			
Yes	98	65.34	
No	52	34.66	
Total	150	100	0.001
Family history			
Yes	108	72	
No	42	28	
Total	150	100	0.0005
History of hypertension			
Yes	95	63.34	
No	55	36.66	
Total	150	100	0.001
History of diabetic			
Yes	80	53.34	
No	70	46.66	

Total	150	100	0.1
History of taking steroid			
Yes	89	59.34	
No	61	40.66	
Total	150	100	0.01
Smoking			
Yes	78	52	
No	72	48	
Total	150	100	0.2

Table 2 show that the rate of open angle glaucoma is more in those who have I.O.P.>20 mmhg92% ,myopia 65.34% ,family history72%,history of hypertension 63.34%, history of diabetes 53.34%,history of taking steroid 59.34% and smoking 52%.

O.A.G was significantly associated with I.O.P 0.0001,myopia P0.001,family history 0.0005,history of hypertension 0.0.001,history of taking steroid 0.01. and it show that there is no significant association with history of diabetes and smoking (P 0.1,0.2) respectively.

DISCUSSION

The advanced age show a significant association with O.A.G in this study (P value 0-0002)this agree with many studies^(6,7,8)

Primary open-angle glaucoma is a disease that develops later in life. Both incidence and prevalence increase more than linearly with age. In assessing this factor, we could think of age as a surrogate that stands for the deterioration of relevant tissues with time, potentiating ganglion cell death. Older age is also a measure of the length of time that the person is exposed to other risk factors before developing disease. In this sense, it is not inherently a cause, but a measure of the amount of other factors. Age may also be a measure of how long the person with OAG has had the disease, so it stands for duration and may be expected to be associated with greater damage when the disease is progressive. Older age may also modify the attitude of the patient toward disease, perhaps inhibiting cooperation with therapy. Finally, older persons are more often on fixed incomes and their lower socio-economic status may prevent the purchase of eye drops ^(6,7,8)

Gender is not a risk factor in this study (Pvalue0.2) this go with most studies of OAG ^(6,7,8) although one study show that men have been found to have greater risk for presence of disease or progression than women⁽⁹⁾ this may be due to the sociocultural attitudes that differ between men and women in ways that are not genetically determined and that differ among cultures. For example, men and women in the United States differ in their rates of accessing medical care, in what care is offered or accepted and in financial resources available to them to pay for treatment ⁽⁷⁾. Each of these may modify the relationship of sex to OAG. One study indicated that risk was higher in women with menopause ⁽¹⁰⁾ .

In this study I.O.P show strong associating with O.A.G . the majority (92%) 138 out of 150 of OAG patients diagnosed in this Study had high IOP rang.(Pvalue 0.0001) thus IOP, is still identified as a significant risk factor for having OAG It is well known that high IOP is a major risk factor not only for developing OAG but also for progression of OAG which means that having an IOP higher than average (20 mmHg) makes the risk for having POAG about twice ^(6,7,8,9,10,12,13) this is not agree with a Study in China in 2008 show that glaucoma occur in normotensive IOP among Chinese population as myopia is the main risk factor in this population⁽¹¹⁾.

Myopia was a significant risk factor for POAG in this study (P value 0.001) There is population-based studies suggesting association of myopia with the risk for POAG⁽¹⁴⁾ . There is also a report that the association of myopia and glaucoma was strong in glaucoma patients with normal or low I.O.P(11)

Family history in this study show a significant association with O.P.A.G(P valu0-0005).this agree with many studies ^(6,7,8,12,13) but the information obtained in the interview with participants about the family history of glaucoma was very limited, we cannot draw a conclusions from the present study concerning the association of family history with OAG.

History of hypertension show a significant association with OAG in this study (Pvalue 0-001) The association between hypertension and POAG was mostly likely due to correlation of age and hypertension. This is in agreement with many studies ^(6,7,8) the relationship is not simple and must be considered in the light of other risk factors that interact with blood pressure ⁽¹⁵⁾.

History of Diabetes in this study show no significant association with O.A.G Pvalue(0.1) .this agree with Bonovas S et al study ⁽¹⁶⁾ .although diabetes was assumed to be a risk factor for OAG in many studies^(6,7,8) .Corticosteroids using history show a significant association with O.A.G(Pvalu 0.01) this agree with many studies^(6,7,8)

Steroid exposure has been associated with increases in IOP. Topical corticosteroid eye drops and oral intake of large steroid doses has long been known to raise IOP. In this study smoking history show no significant association with O.A.G P value (0.2).Cigarette smoking, although a major risk factor for macular disease and cataract, has not been consistently been associated with OAG ⁽¹⁷⁾.

CONCLUSION

This study was exploring the main risk factors of O.A.G. The most important risk factors for OAG are elevated IOP, increasing age, family history, and myopia. For the other risk factors hypertension ,diabetes and corticosteroid using drug they should, always be considered alongside with the clinical examination for signs of OAG, which has traditionally focused on assessment of the optic nerve head, Recent innovations in diagnostic technology such as optical coherence tomography (OCT) and dynamic contour tonometry, bring exciting prospects of improved detection of glaucoma within reach of the community optometrist. Further research into glaucoma risk factors will increase our knowledge of an individual patient's personal risk profile for the disease.

RECOMMENDATION

Education of the people about risk factor associated with glaucoma and routine checking of I.O.P for old age and patients with hypertension and diabetic

REFERENCES:

1. Casson, Robert J; Chidlow, Glyn; Wood, John PM; Crowston, Jonathan G; Goldberg, Ivan "Definition of glaucoma: Clinical and experimental concepts". *Clinical & Experimental Ophthalmology* 2012. 40 (4): 341

2. Quigley, H A; Broman, AT ."The number of people with glaucoma worldwide in 2010 and 2020". *British Journal of Ophthalmology* 2006. 90 (3): 262–267. doi:10.1136/bjo.2005.081224. PMC 1856963. PMID 16488940.
3. World Health Organization: The prevention of blindness. Report of WHO Study Group. World Health Organ Tech Rep Ser 518: 1–18. Received on October 18th, 2012. Accepted on April 28th, 2013.
4. Oliver JE, Hattenhauer MG, Herman D, Hodge DO,, “Prevalence and causes of blindness and low vision in Dambatta local government area, Kano State, Nigeria,” *Nigerian Journal of Medicine*, , 2008. vol. 11, no. 3, pp. 108–112
5. Singh K & Shrivastava Open-angle glaucoma in an urban population in southern India: the Andhra Pradesh Eye Disease Study. *Ophthalmology* 2010;107:1702–9.
6. Lppincott Williams & Wilkins Boland and Quigley J Risk Factors and open-angle ,Glaucoma /July 2007 Volume 16, Number 4,pp234-244
7. Le A, Mukesh BN, McCarty CA, Taylor HR. Risk factors associated with the incidence of open-angle glaucoma: the Visual Impairment Project in America. *Invest Ophthalmol Vis Sci* 2008; 44:3783–9.
8. Cook and P. Foster, “Epidemiology of glaucoma: what’s new,” *Canadian Journal of Ophthalmology*,2012 vol. 47, no. 3, pp. 223–226.
9. Bengtsson B & Heijl A, long-term prospective study of risk factors for glaucomatous visual field loss in patients with ocular hypertension. *J Glaucoma* 2006;14: 135–138.
10. Sommer A, Tielsh JM, Katz J, I. Relationship between intraocular pressure and primary open angle glaucoma among white and black Americans: the Baltimore Eye Survey. *Arch Ophthalmol* 2009;109:109
11. Kwon YH, Kim CS, Zimmerman MB, Alward WL & Hayreh SS ;The prevalence of glaucoma in Chinese residents of Singapore: a cross-sectional population survey . *Arch Ophthalmol* 2008;118:1105–11.
12. Nemesure B, He Q, Mendell N. Inheritance of open glaucoma in the Barbados family study. *Am J Med Genet.* 2009;103:36–43.
13. Tielsch JM, Katz J, Sommer A. Family history and risk of primary open angle glaucoma. The Baltimore Eye Survey. *Arch Ophthalmol.* 2006;112:69–73..
14. Mitchell P, Hourihan F, Sandbach J, I. The relationship between glaucoma and myopia: the Blue Mountains Eye Study. *Ophthalmology.* 2009;106:2010–2015.
15. Mitchell P, Lee AJ, Rochtchina E. Open-angle glaucoma and systemic hypertension: the blue mountains eye study. *J Glaucoma.* 2006;13:319–326.
16. Bonovas S, Peponis V, Filioussi K. Diabetes mellitus as a risk factor for primary open-angle glaucoma: a meta-analysis. *Diabet Med.* 2007;21:609–614
17. Bonovas S, Filioussi K, Tsantes A, et al. Epidemiological association between cigarette smoking and primary open-angle glaucoma: a meta-analysis. *Public Health.* 2008;118:256–261.

