The Prevalence of Ocular and Systemic Disorders in a Hospital-based Veterans Administration Optometry Clinic

Angela M. Harvey
D. Bart Darnell

Michaël Vandeveer, OD, MPA
Eye Clinic (123)
VA Medical Center
Battle Creek, MI 49016

ABSTRACT

This study calculated the prevalence of ocular and systemic disorders among optometric patients of the V.A. Medical Center, Battle Creek. The charts of 768 optometry clinic patients were retrospectively reviewed. Age, race, visual acuity of best eye, refractive status, recall date, and the presence of ocular or systemic disorders were analyzed. Age-adjusted prevalence rates for ocular and systemic disorders were significantly higher in this veteran population compared to the general U.S. population. The elevated rate of disease and comorbidity among patients receiving care at this Veterans Administration Optometry clinic emphasizes the importance of yearly eye exams for every veteran.

KEY WORDS

Veterans, Glaucoma, Diabetic retinopathy, Age-related macular degeneration, Cataracts.

Introduction

As early as 1975, it was reported that a substantially higher ocular disease rate exists among veteran patients when compared with the general population.(1) At that time, the average age of a veteran was 55 years. Twenty years later, veterans have aged along with the rest of the nation and now have a mean age of 60. Because the prevalence of many diseases strongly correlates with age, it seems appropriate to hypothesize that veterans now suffer from an even higher number of chronic conditions, including ocular disorders.

The purpose of the study has been to determine the prevalence of ocular and systemic disorders among patients seeking care at a hospital-based optometry clinic. Age, race, visual acuity, refractive status and recall dates have been included to further define this veteran population. This information may provide Veteran Administration officials with a greater understanding of the complicated issues that must be considered when managing patients with comorbity (coexistence of chronic conditions).

Methods

A retrospective review was performed using the charts of all patients who were examined in the Battle Creek Veterans Administration Optometry Clinic from February 1, 1995 through July 15, 1995. During that time period, 768 male veterans, 11 female veterans and 2 Hispanics received care. Neither the female patients nor the Hispanics were included in the study because the low number would not yield reliable epidemiological estimates. Care was taken in noting the age, race, visual acuity of the best eye, refractive condition, ocular and systemic disorders, referrals and recall. Each record represented an office visit which encompassed full exams and follow-up appointments. Follow-up visits were not excluded from the study because a true representation of patient encounters was sought. Patient care was provided by the chief of optometry, optometry resident or senior optometry interns.

Results

Seven hundred and sixty-eight male patients, 595 Caucasians and 173 African Americans were included in the sample. They ranged in age from 23 to 91 years, with a median age of 59.0 years. 52.3% of the veterans were between the ages of 61 and 80. (Table I)

Two hundred and thirty-two diabetic patients were seen during the five month span. Our study did not identify the patients as Type I or Type II diabetics. 160 (69.0%) had no signs of diabetic retinopathy, while 72 (31.0%) showed evidence of retinal involvement. Interestingly, 31 of the 72 patients with retinopathy were also being treated for hypertension which represented a 43.1% rate of comorbidity.

When considering Primary Open Angle Glaucoma (P.O.A.G.), the data was more meaningful when cross referenced with race. Overall, 86 veterans (65 Caucasian and 21 African-American) were diagnosed with glaucoma while 161 veterans (128 Caucasian and 33 African-American) were being followed as glaucoma suspects. Patients with diagnosed glaucoma included those under-going medical or surgical therapy. Glaucoma suspects were defined as having one or more risk factors or signs of glaucoma, yet not having a definitive diagnosis yet. The projected prevalence rates for P.O.A.G. among veterans was nearly identical for both races, 11% for Caucasians and 12% for African-American veterans. Similarly, the prevalence of glaucoma suspects was suggested to be 22% Caucasian and 19% African-American.

Eighty-four veteran patients (10.9%) had evidence of Age-related Macular Degeneration (A.M.D.), while 102 patients (13.3%) had vision-decreasing cataracts. Interestingly, only 16 of the patients suffered from both AMD and cataracts.

Fifty-three referrals were made to ophthalmology during the five month time period. Cataract referrals accounted for 18 of the referrals, with diabetic retinopathy being the next most frequent with 12 referrals. (Table II).

Twenty-four patients were referred by a Veterans Administration physician to the Optometry Clinic for evaluation of a "red eye". Sixteen were determined to be caused by an infectious agent while eight were the result of an inflammatory process. This implies that 33.3% of the "red eyes" were non-infective.

Refractively, most of the veterans were compound hyperopic astigmats (51.0%). Twenty-five percent of the patients were myopic astigmats, while 12.4% were simple hyperopes. Approximately 5.6% were simple myopes and 5.5% needed astigmatic correction alone. Only 187 (24.3%) had refractive conditions without signs of ocular disease. This implies that 75.7% of veterans seeking care at the V.A. Optometry Clinic have ocular disease. (Table III).

Visual acuity was analyzed with regard to the better eye. When considering entering acuity with best correction, 83.6% could see better than 20/40. In terms of exiting acuity, 90.5% could see 20/40 or better with best correction. (Table IV).

Less commonly encountered ocular anomalies were also noted. Blepharitis, corneal abnormalities and macular problems (non-AMD) were most frequently recorded. (Table V).

In terms of systemic disorders, 268 out of 768, or 34.9% of the veterans were being treated for hypertension. Diabetes was the next most common systemic condition with 232 veterans (30.2%) affected. Additionally, 171 patients (22.3%) were afflicted with cardiovascular disease. Sixty-nine veterans, or 9.0%, had pulmonary disease. Only 215 out of 768 veterans, or 28.0%, did not suffer from any documented systemic disorders. (Table VI).

Lastly, recall dates were analyzed. 27% of the patients were scheduled to be seen as a follow-up in less than three months, while 17% would be seen in 3-6 months. The rest of the patients (56%) were scheduled to return in six months to one year. There were 1,165 scheduled exams within the five and one-half month period. Two hundred and

eighty-eight veterans were "no-shows", representing a 25% failure to keep their appointment. In addition, 109 patients rescheduled their appointments (9%).

Discussion

This is the most comprehensive study of patients being seen at a hospital-based Veterans Administration Optometry clinic to date. Often, patients receiving care at Veteran Hospital facilities are overlooked in calculating national prevalence rates. The epidemiological results underline the importance of routine eye exams for veteran patients, especially those with documented systemic disorders.

The first important finding is that 30% of the exams involve diabetes. Also, diabetic retinopathy is the second most frequent reason for referral (behind cataracts). Nationally, only 10% of the population aged sixty years or older have diabetes, while 20% of the population over eighty years are afflicted with diabetes.(2) This statistic would suggest that the prevalence of diabetes among veterans may be higher than the civilian rate. Almost one in three diabetic veterans seen in the Optometry clinic have evidence of retinopathy. It has been shown that a strong and consistent relationship exists between hyperglycemia and incidence and progression of retinopathy.(3) Many of the veterans admittedly had poor glycemic control which has been linked to a faster progression of retinopathy. Also, a number of veteran patients smoked cigarettes which also results in a faster progression of diabetic retinopathy.(4) Finally, 43.1% of the diabetic patients with retinal complications were also classified as hypertensive. Scientists have speculated that high blood pressure causes damage to the tiny retinal blood vessels and can be a significant predictor of whether Type I diabetics would go on to suffer from retinopathy.(5) In summary, diabetic veteran patients may have a greater

prevalence of diabetic retinopathy due to the higher rate of poor glycemic control, smoking cigarettes, or via hypertensive damage.

More interestingly, this study provides information about the prevalence of glaucoma among Caucasians and African-Americans seeking care in a V.A. optometry clinic. This information has not been published previously. The prevalence rates for P.O.A.G. among veteran patients is nearly identical for both races, 11% for Caucasians versus 12% for African-Americans. Also, the prevalence of suspected glaucoma is very similar; 22% for Caucasians and 19% for African-Americans. These results are strikingly different from the results of community-based and cross-sectional studies. The Baltimore Eye Survey, a community-based study, projected that age-adjusted prevalence rates for P.O.A.G. were 4-5 times higher in African-Americans as compared with Caucasians.(6) The prevalence rate proposed by the Baltimore Eye Survey for African-Americans ranged from 1.23% (age 40-49) to 11.26% (over 80 years) while rates among Caucasians ranged from 0.92% to 2.16%, respectively. Cross-sectional studies estimate that glaucoma-related blindness is 6-8 times more common among African-Americans than among Caucasians.(7) The disparity between the prevalence rates proposed by our study of veterans and those rates based on community and cross-sectional studies should not be misinterpreted. This study was not intended to investigate racial variations since more standardized studies have already shown that African-Americans are more genetically susceptible to P.O.A.G. than Caucasians. Instead, our study pointed out that more Caucasians seek care at a V.A. Optometry Clinic than do African-Americans. Given the high cost of glaucoma medications, many veterans with glaucoma specifically seek treatment through the V.A. Optometry Clinic in order to save money.

Age-related macular degeneration (AMD) was observed in 84 veteran patients producing a prevalence rate of 10.9%. This data agreed with Ferris' estimate that 9% of patients older than 52 suffer from one or more forms of AMD.(8) As in diabetic retinopathy, cigarette smokers faced a higher risk of retinal damage. Cigarette smokers

have a nearly threefold greater risk of developing AMD than do non-smokers.(9) It would seem appropriate to warn patients that smoke cigarettes about the relationship of smoking and the development of AMD.

With regard to cataracts, it is difficult to compare the prevalence rate calculated by our study with national prevalence rates. The statistics furnished by The Framingham Eye Study were based on a strict classification of cataracts and yielded a 28.5% prevalence for those aged 65-74 and a 45.9% prevalence for those aged 75-84.(10) Our retrospective review did not strive to classify cataracts and was not based on a strict identification scheme. The presence of cataracts was simply noted during the examination by the Optometric care-giver whenever cataracts were responsible for a loss of acuity. Our study shows that 13.3% of the veterans have vision-decreasing cataracts. In fact, the most frequent referral was for cataract surgery. Smoking has been identified as an independent risk factor for cataracts and their progression.(11) In addition, heavy alcohol consumption has been linked to cataract formation.(12) Because cataract surgeries are costly, education about risk factors and prevention of cataract formation should be emphasized.

Sixteen veteran patients had both Age-related Macular Degeneration (AMD) and cataracts. One study has proposed that cataracts may retard the development of AMD.(13) In accordance, the results of our review show that only 16 out of 102 patients with cataracts also have A.M.D. whereas 84 veterans suffered from AMD without cataracts. The findings of our study support the idea that cataracts have a protective quality and guard against the development or progression of AMD.

Systemic conditions are common among veterans and are present at a significantly higher frequency than in civilian populations. In fact, only 28.0% of the veterans in the Optometry clinic do not have a documented systemic disorder. The most prevalent disorder is hypertension. One out of every three veterans (34.9%) is being treated for high blood pressure. Closely following hypertension is diabetes. Thirty

percent of the veterans treated at the Optometry clinic have diabetes. The next most common disorder is cardiovascular disease which afflicts one out of every five veterans, or 22.3% of the patients in the Optometry clinic. Nine percent of the veterans suffer from pulmonary disease. Hypertension, diabetes, cardiovascular disease and pulmonary disease are the four most common conditions, but as recorded in Table VI, they are not all-inclusive. Arthritis, psychological problems requiring medication, calcium deficiencies, stroke, thyroid disorder and high cholesterol are also encountered in the Optometry Clinic on a regular basis.

In summary, the data obtained from our retrospective review shows that both ocular and systemic disorders are more prevalent among veterans versus the civilian population. The explanation for this discrepancy remains entangled in a variety of socio-economic factors and lifestyle choices such as diet, cigarette smoking and the use of alcohol. In light of these findings, veterans are entitled to information about the increased likelihood of ocular disease if they choose unhealthy habits. It is the duty of every primary health care provider to identify at-risk patients and to convey the importance of making wise lifestyle choices. The burden of escalating health care costs demands that every health provider encourage prevention of disease before treatment of disease.

Table I: Age and Race of veteran patients

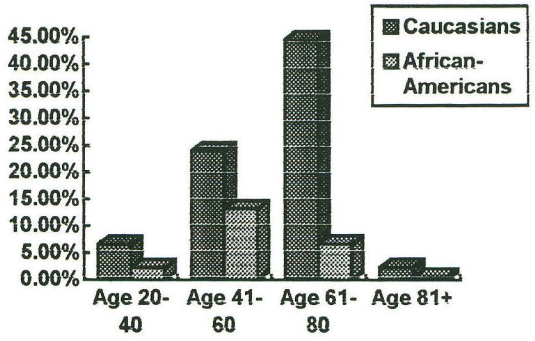

Table II: Referral to Ophthalmology

Reason for referral	Number of referrals
Cataract	18
Diabetic Retinopathy	12
Glaucoma	5
Chalazion	5
Pterygium	3
Neovascularization of iris	1
Retinal detachment	1
Secondary lens membrane	1
Branch Retinal Vein Occlusion	1
Peripheral Iridotomy	1
Anterior Ischemic Optic Neuropathy	1
Macular hole	1
Optic Nerve atrophy	1
Hypertensive retinopathy	1
Lamellar hole	1

Table III: Refractive Status

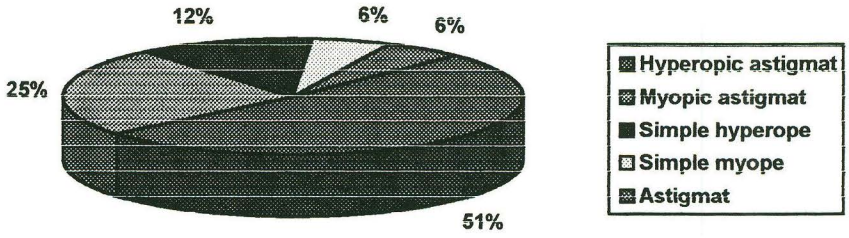

Table IV: Visual Acuity of Best Eye

Visual acuity (Snellen)	Entering V.A.(N)	Exiting V.A. (N)
20/40 or better	642	695
20/50 - 20/100	81	36
20/100 or worse	15	7

*Not all of the patients were able to perform visual acuity testing due to non-cooperation or significant visual loss.

Table V: Ocular disorders among Optometric patients

Ocular anomaly	Number (Prevalence)
Sight-decreasing cataracts	102 (13.3%)
Diagnosed Primary Open-angle Glaucoma	86 (11.2%)
Age-related Macular Degeneration	84 (10.9%)
Diabetic retinopathy	72 (9.4%)
Blepharitis	18
Corneal abnormalities	17
Macular problems (non-A.M.D.)	16
Bacterial conjunctivitis	16
Strabismus	15
Inflammation/Iritis	10
Retinal Detachment	8
Histoplasmosis	8
Optic nerve anomalies	7
Pterygium	7
Lattice	6
Asteroid Hyalosis	6

*Less than 4 of the following were also noted: Lid irregularities, A/V Plaques, Synechiae, Retinal holes, Reticular degeneration, Posterior Staphyloma, Amblyopia, Non-glaucoma Field defects, Chalazion, Central Areolar Sclerosis, Ischemic Optic Neuropathy, Melanoma, Chorioretinitis, Symblepharon, Cicatrical Pemphigoid, Commotio Retinae, Trichiasis, Herpes, Uveitis, B.R.V.O., C.R.V.O., Pigment Dispersion Syndrome, Toxoplasmosis, Preceptal Cellulitis, Retinoschisis, Retinitis Pigmentosa, Blow-out Fracture, Exophthalmos, Sickle cell Retinopathy, Lens pigmentation, White without pressure and Pseudo-exfoliation.

Table VI: Prevalence of Systemic Disease

Sytemic Disorder	Number (Prevalence)
Hypertension	268 (34.9%)
Diabetes	232 (30.2%)
Cardiovascular Disease	171 (22.3%)
Pulmonary Disease	69 (9.0%)
Arthritis	41 (5.3%)
Psychological disturbances	30
Calcium deficiencies	22
Central Vascular Accident	22
Thyroid Disorder	14
Elevated Blood Cholesterol	9
Multiple Sclerosis	3
Systemic Lupus Erythema	2
Neurofibromatosis	1
Huntington's Disease	1
Asbestosis	1
Sickle cell Anemia	1
Acne Rosacea	1
Herpes	1
Pancreatis	1
Anemia	1
Osteoporosis	1
Krohn's Disease	1
Syphilis	1
Hodgekin's Disease	1
Sjogren's Disease	1
Reynaud's Syndrome	1
Sarcoid	1

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