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Family physician Corner

Screening of Diabetic Retinopathy in Primary Care

Rabha Salman MD, FAM.MED*

Diabetes mellitus is becoming one of the common conditions worldwide. Diabetic retinopathy is one of its chronic micro vascular complications. It is the most frequent cause of new cases of blindness among adults aged 20–74 years[1-3]. Screening all diabetic patients for retinopathy can identify the disease at an earlier, more treatable stage. All people with diabetes should be referred to an ophthalmologist or optometrist for baseline retinal assessment and follow-up[4] .In Bahrain, despite the high prevalence of diabetes, and the fact that it might be the first or second leading cause of blindness, the patients are still under-screened. There are different modalities of eye screening in primary care, these include: hand-held direct fundoscopy, and photography. A national screening program should be developed to ensure hundred percent coverage .A diabetic based register would be an essential step, in this program, to ensure that all diabetic patients are in the system for eye screening.

Diabetes now affects around 30% of the Bahraini population[5], and 10.6% in non-Bahraini workers[6]. This prevalence is one of the highest in the world. Diabetic retinopathy, one of its chronic complications, is the commonest cause of blindness in both UK[7] and USA[3] in the working age group. In Bahrain, there is not yet a study on the prevalence of causes of blindness, but it is estimated that diabetic retinopathy can be the first or second leading cause of blindness based on the high prevalence of diabetes itself. The prevalence of retinopathy, its stage, and emergence of complications are strongly related to the duration of diabetes[3]. In Bahrain, it was noticed that some diabetic patients presented for the first time in ophthalmology clinics, with major retinopathy complication.

In its early stages, diabetic retinopathy is symptom-free[4]. Therefore, regular eye examination is needed to identify cases and provide treatment, if necessary. Diabetic retinopathy fulfils the criteria for a disease to be effectively screened: a defined population, a well-known clinical course, and availability of effective treatment[8]. In fact, one of the main motivations for screening for diabetic retinopathy is the established efficacy of laser photocoagulation in preventing visual loss. Two large trials, the Diabetic Retinopathy Study (DRS), and the Early Treatment Diabetic Retinopathy Study (ETDRS), provide the strongest support for the therapeutic benefit of photocoagulation[2]. Protection against visual impairment after laser therapy has been found to last for 10 years in two-third of treated patients[4]. Thus the investment in diabetic retinopathy screening has proven to be good value for money[4].

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* Family Physician
Mohammed Bin Jassim Kanoo Health Center
Directorate of Health Centers
Ministry of Health
Kingdom of Bahrain

All people with diabetes should be offered annual or more frequent examination, if clinically indicated[4]. The American Diabetic Association (ADA) recommends that the examination be performed by either an ophthalmologist or by an optometrist experienced in the diagnosis and treatment of diabetic eye disease[3]. As a rule of thumb, diabetic patients are screened at the diagnosis and annually thereafter with some important specifications in type I diabetes and pregnancy[8]. In type I diabetes, patients can wait 3 to 5 years after diagnosis for the first eye examination, or until the age of 10 years, as retinopathy is uncommon before puberty. However, increasing the awareness, on the eye affection in diabetes, among these patients is important. Furthermore, all women who are planning for their pregnancy should have a baseline examination and then once in every trimester[3,8]. Apart from this, referral of diabetic patients should be made to an ophthalmologist if there are any persistent or unexplained visual symptoms[3].

As was mentioned before, it was noticed by ophthalmologists in SMC hospital that some of the diabetic patients presented for the first time to their clinics with major diabetic retinopathy complications like vitreous hemorrhage. This late referral and under screening can be attributed to both doctors and patients factors. Primary care physicians can easily miss referring these patients in the absence of enough consultation time (7 minutes), and absence of good record keeping, which has a recall system that can remind the physician about the status of patients' referral. In addition, the physician might be unaware of the importance of eye screening in retinopathy prevention. On the other hand, many patients didn't have annual examination because they didn't know they needed it or they were not aware of retinopathy, as it is asymptomatic in its initial stages[3].

Although, it is recommended that ophthalmologist or optometrist should do the screening of diabetic patients[3], it is done in some places like UK, in primary care clinics, by anyone who is accredited, competent, has undergone suitable training and continuing education, and is part of their national quality assurance scheme[4]. If any patient was identified with sight threatening or proliferative retinopathy, he will be referred to specialist care as either "urgent" or "soon" case in accordance with NICE guidelines (National Institute Of Clinical Excellence - London)[9]. There are two different methods of diabetic retinopathy screening that can be used in primary care, these include: hand - held direct opthalmoscopy and photography[5]. Examination with hand held ophthalmoscope is not sufficient to rule out diabetic retinopathy even by expert people and is not used alone anymore. Photography screening can be done by conventional or digital camera. Digital camera replaced the conventional type as it fulfills the instrumental requirements for a practical and cost-effective tool to acquire data needed to identify diabetic patients who must be referred to an eye-care specialist[10]. Furthermore, digital retinal photography achieves the highest accuracy of all screening methods and can produce an image that can be stored and added to the clinical record[4]. Photography is usually done by a well trained optometrist or photographer and can be graded either by automated reading software or manually by a trained reader. Patients with abnormal findings are referred directly to ophthalmologist for further assessment. In Bahrain, a digital camera was introduced to one of the health centers as a trial. A trained optometrist does the photography and read them. Any abnormal cases are sent to ophthalmology clinic for further evaluation. If this trial becomes successful in term of case finding, it will be

generalized to all other health centers. Many retinal complications could be avoided in the future.

To maintain consistency of eye care among all local health centers and ensure hundred percent coverage, a national screening program should be developed .A diabetic based register and good record keeping would be an essential step, in this program, to ensure that all diabetic patients had been checked at least once and are in the system to be called back regularly for their screening again in the future. The program should aim to make digital retinal photography available to all local health centers, provide these health centers with a well trained photographers and readers, improve the access for referral to specialist clinics with minimizing the waiting time for abnormal cases, and educate the patients about diabetic eye disease, and the importance of the screening program in term of prevention of major retinopathy complications.

In conclusion, screening and early treatment of diabetic retinopathy has been found to prevent visual impairment and blindness[8]. Investing in diabetic retinopathy screening program has been found to be less expensive compared to the budget that would be placed in treating the complications[4]. Immediate action is required to generate a step change in our service to these diabetic patients.

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