An inaugural study of screening for diabetic retinopathy in Bermuda

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Purpose

The cost of living in Bermuda is amongst the highest in the world. Consequently, people with chronic health issues struggle to afford treatment, being often uninsured or underinsured. This study aimed to assess the burden of diabetic retinopathy (DR) amongst people with diabetes in Bermuda.

Figure 1. Map of Bermuda in the Atlantic Ocean (Google Maps)

Methods

People with diabetes mellitus (DM) were invited (social media, posters, radio) to attend diabetic eye-screening free of charge at the Bermuda Diabetes Association (BDA) or the Patient-Centred Medical Home (PCMH), King Edward VII Memorial Hospital. Lifestyle and diabetes questionnaires were undertaken, and blood pressure, HBA1C, and Body Mass Index (BMI) determined. Following visual acuity testing using the Snellen chart, eyes were dilated (1% tropicamide) and images taken with Optomed Aurora (Finland) handheld non-mydriatic cameras. A macula-centred and an optic disc-centred image were taken per eye where possible. These were then graded by 2 experienced graders and an adjudicator. Results letters were sent to GPs for all attendees.

Figure 2: Examples of pathology. A & E- proliferative DR (PDR), B & D- retinal haemorrhages, C- maculopathy, F- drusen

Results

Altogether, 172 people with diabetes were screened (132 at BDA, 40 at PCMH), 61% were female, 88% had type 2 diabetes mellitus. Mean age was 65.5 years (range 15-89), mean diabetes duration 13.3 years (1-50), mean HbA1c 7.6% (5.1-13.1) and mean BMI 31 kg/m (18-56.3).

Of 165 with gradable images; 61% had no signs of DR, 28% had a worst-eye grade of mild non-proliferative DR (NPDR), 4% had moderate non-proliferative DR and 7% had a worst-eye grade of proliferative DR (PDR). Maculopathy was present in 11%, bilaterally in 7%. Of the 38 persons with no insurance, 11 (29%) required referral, compared to 23 (18%) of the 126 insured individuals with gradable images.

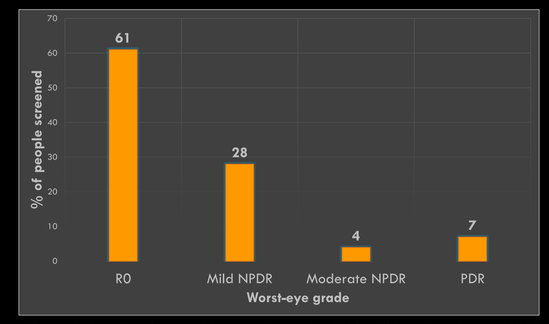

Figure 3: % of patients with no retinopathy (R0), mild and moderate NPDR and proliferative retinopathy

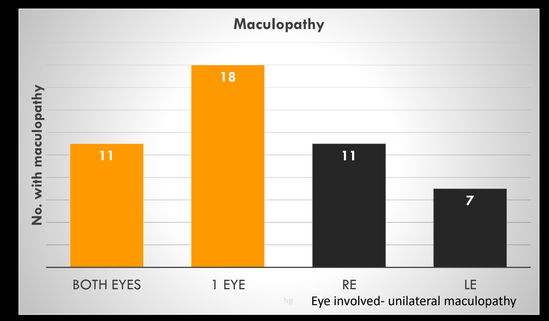

Figure 4: No. of subjects (out of 165) with bilateral and unilateral maculopathy, and right or left eye involvement for unilateral maculopathy

Figure 5: L-Screening with the handheld Optomed Aurora camera and R- visual acuity testing

Conclusion

This inaugural study provides good quality but concerning data due to the relatively high rates of referrable DR in this cohort of people with diabetes in Bermuda. A more extensive study is required to determine the true prevalence of DR in Bermuda in order to provide the basis for a structured and systematic screening program to prevent blindness, particularly in the under- and uninsured.

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