



How to manage ocular manifestations of diabetes mellitus in a medical student run charity clinic

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Abstract

Medical students are restricted in serving patients with diabetes mellitus in student-run charity clinics. These patients can face potentially devastating and irreversible consequences in their vision due to poor management of the disease. By conducting simple visual acuity, tonometry, and visual field by confrontation screenings, as well as educating patients on the importance of a healthy lifestyle and proper management of diabetes mellitus, medical students can help save these patients from developing severe vision deficits.

Leading a medical-student run charity clinic has several restrictions that impact the quality of care offered to its patients. Students are not licensed to administer medications, independently perform many procedures, and are limited in time and financial support. These restrictions are considered when triaging eye-care patients for further professional evaluation and treatment. Understanding the ocular pathology progression and signs in patients with diabetes mellitus helps manage these patients in a charity clinic.

Patients with diabetes mellitus are recommended to have an annual comprehensive dilated eye exam for professional observation of pathology.¹ Although many medical students cannot perform a dilated exam, a basic vision screening is still beneficial for these patients. Patients with diabetes mellitus may develop diabetic retinopathy, diabetic macular edema (DME), cataracts, or glaucoma.¹ A vision screening involving visual acuity tests (such as the use of a Snellen Chart) can address obvious pathologies related to DME and cataracts—which both present with either unilateral or bilateral blurred

vision.¹ Additionally, visual field by confrontation examination can detect progressed pathologies of glaucoma and diabetic retinopathy—which present with peripheral vision loss and central vision loss, respectively.¹ Early stages of glaucoma do not present with vision loss, but can be detected by tonometry—a procedure that may be done by students with proper training and supervision. Tonometry measures intraocular pressure, which increases either gradually or acutely with glaucoma. Complications of tonometry include possible hypersensitivity reactions to latex tonometer tip covers or anesthetics, thus proper tonometry training and supervision is recommended. Early stages of diabetic retinopathy (non-proliferative diabetic retinopathy) do not present with vision loss or any observable signs, unless with the examination of fundus photography. If patients have signs of glaucoma, DME, or proliferative diabetic retinopathy, they must be addressed immediately and passed on to the care of an ophthalmologist for treatment. Women with diabetes who are pregnant should also be referred for a proper dilated eye exam.¹ Diabetic cataract patients should also be referred for further treatment, although cataracts are not considered to be

emergency complications, due to their slow progression in vision loss and availability of treatment. The medical student may also be of benefit to the patient by arranging a meeting for the patient with a medical insurance counselor that may help deter the financial burden of further necessary treatment, such as surgical interventions.

If a patient with diabetes mellitus does not present with any immediate vision impairment, it cannot be ruled out that the patient does not have non-proliferative diabetic retinopathy or diabetic macular edema. Patients generally develop diabetic retinopathy by 20 years after diagnosis, particularly patients with Type-1 diabetes mellitus.² Although it is recommended that these patients have annual dilated eye exams, medical students can greatly delay, and sometimes prevent, the onset of diabetic retinopathy by educating patients on the ocular pathologies of diabetes and general diabetes management. By controlling hypertension levels with the cessation of smoking and drinking alcohol, adequate physical activity, proper calorie intake and lipid/blood glucose control, patients have a reportedly much better prognosis in their ocular health.³ Medical student-run charity clinics often have additional diabetic, heart-health, pharmaceutical, and counseling services that can be very beneficial in developing lifestyle behaviors and diet plans that will help deter the ocular complications of diabetes mellitus in patients unable to afford annual dilated eye exams.

Although medical students that lead charity health care clinics for the underserved population in their community may feel very restricted in their ability to provide ocular care for patients with diabetes mellitus, they can still be of significant aid to their patients. Medical student clinics should develop a diabetic eye screening protocol that is within their level of comfort, financial support, and supervision. Some of the easier and inexpensive procedures include assessing visual acuity via a Snellen chart, assessing the patient's visual field by confrontation, assessing

the integrity of the light reflex in each pupil, assessing the retina and optic nerve for significant pathology via a direct ophthalmoscope, measuring the patient's blood pressure and assessing their level of adherence to diabetic therapy. A more expensive tool, but invaluable for early detection of glaucoma, would be the use of a Tono-Pen to measure the intraocular pressure of each eye. Finally, with proper training and equipment, some clinics may be able to better visualize retinal pathologies in patients with diabetes mellitus via an indirect ophthalmoscope. By knowing the progression and signs of ocular pathologies, educating their patients on diabetes management, and referring them to professional healthcare centers when necessary, students can still provide these patients with invaluable aid.

References

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