

Novel Trends in Screening for Diabetic Retinopathy

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Diabetic retinopathy screening is the first step to take for treating diabetic patients in a large population. We don't know as of now, how many people are actually suffering from Diabetic Retinopathy. The actual no of patients are much more and it's increasing daily. Because of the slow progress nature of the disease, patients themselves don't know for years, that they are suffering from diabetes. Once it starts affecting all the microvascular structures of body, the effect becomes more prominent. Eye and kidney are one of the most important organs to get affected in diabetes. A no of different tests are getting done in community level to detect DR in early stage. With the progress of telemedicine and wide community awareness it's becoming easy to detect and screen patients in early stages and treat them.

Keywords: Screening; Diabetic Retinopathy; Eye; Kidney**Introduction**

Diabetic retinopathy is a major cause of ocular morbidity all around the world. With increasing the duration of disease, retinopathy also worsens. Currently more than 250 million people worldwide are suffering from Diabetes. Out of them, more than 150 million are having retinopathy. WHO projects that the number of people affected will be doubled by 2025 [1]. Screening for DR is important because the majority of patients who develop DR have no symptoms until macular edema (ME) and/or proliferative diabetic retinopathy (PDR) are already present. The efficacy of laser photocoagulation and/or vascular endothelial growth factor (VEGF) inhibitors in preventing visual loss from PDR and ME is well established in randomized trials. However, these therapies are more beneficial in preventing visual loss than reversing diminished visual acuity. Thus, early detection through screening programs and appropriate referral for therapy are important to preserve vision in individuals with diabetes [2].

Epidemiology

Of an estimated 285 million people with diabetes mellitus worldwide, approximately one third have signs of Diabetic Retinopathy (DR) and of these, a further one third of DR is vision-threatening DR, including diabetic macular edema (DME) [3].

Will screening really going to help?

For screening to be equally effective, it is important from patients point of view too to be ready to get screened. Unfortunately, a no of patients are not aware properly, some do not take the issue seriously. There is also a matter of financial burden and social stigma attached to it. Mathematical models have been used to examine the cost-effectiveness of annual and semi-annual screening intervals in patients with diabetes. These analyses come to broadly similar conclusions. Annual screening for diabetic retinopathy in all patients with type 1 diabetes is cost-effective (provided the screening modality is sufficiently sensitive), when the economic impact of a person's blindness is balanced against the health costs incurred by treatment and screening. The economic argument for annual screening of all patients with type 2 diabetes is less convincing. The two analyses that have specifically investigated this area concluded that only those patients with type 2 diabetes who require insulin, or in whom retinopathy has been previously detected, warrant annual screening. Neither of these mathematical models, however, allows for the additional administrative costs of running several different screening programmes for patients with type 2 diabetes. The economic argument for the annual screening of all patients with type 2 diabetes might have been more persuasive if these costs had been taken into consideration [5].

How to screen patients for retinopathy

According to British Diabetic Association, there are two principal methods-retinal photography (in one of its many guises) and screening by optometrists using the indirect ophthalmoscope or the slit lamp biomicroscope [6]. Methods of screening for diabetic retinopathy include direct and indirect ophthalmoscopy, stereoscopic color film fundus photography, mydriatic or nonmydriatic digital color (and monochromatic photograph). The gold standard for the detection of diabetic retinopathy consists of 30-degree stereoscopic photography of seven standard fields on color film, as developed for the ETDRS-Classification of Diabetic Retinopathy [5].

Innovations to make the work easier

1. **Teleophthalmology and telescreening:** The gold standard method is the Early Treatment Diabetic Retinopathy Study (ETDRS) 7 mydriatic standard field 35 mm stereoscopic color photograph [7]. Digital fundus photography and nonmydriatic photography are more practical alternatives, having the advantage of faster and easier acquisition and transmission and storage of retinal images. Telescreening for DR seems to be a cost-effective, accurate, and reliable method for screening for DR. The trends is increasing mobile broadband use, increasing use of social media, and increasing e-commerce boost the potential of using information technology for DR care [8]. A mobile van with satellite connection goes to remote areas and trained 2 ophthalmic technicians take digitized fundus images which are viewed in real time by retinal specialist at base hospital.
1. **Diabetic awareness programmes:** Better literacy, KAP studies, Involving health policymakers, public motivation and creating an increased awareness among people regarding the magnitude of the problem through awareness programmes has helped in recruiting patients and treating them with necessary follow up [8].
2. **DR counselling and regular follow up:** Regular follow up to avoid late stage complications like vitreous haemorrhage, secondary glaucoma and tractional retinal detachment. Mild to moderate NPDR follow up interval of 6 - 12 months and, severe NPDR, Non-high risk PDR follow up period of 4 months and high risk PDR 1 monthly. Here general practitioners can collaborate with ophthalmologist and make the screening more effective.

With huge population effected with diabetes its a great challenge for govt to motivate people and screen to the grass root level. Along with many international societies like WHO, ORBIS, LIONS club, Sightsavers, has priorities the DR screening. Teaching ophthalmic assistance and technicians to take fundus pictures and via telecommunication take doctors opinion is making the work easier. Creating more awareness via newspaper and televisions more village people can be motivated to have a regular follow up and screening.

Conclusion

With the aging population increasing in no, the no of cases will be keep on increasing. It's our duty to screen and diagnose Diabetic Retinopathy patients in early stages and treat them, as the prognosis of visual outcome in late stages are not very good. With progress of modern medicine and use of technology it has become very easy to diagnose early. Screening of population in regular intervals, with follow up of known patients according to schedules, are definitely a must need of the hour to combat Diabetic retinopathy.

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Conclusion

In old patients with decreased endothelial cell count, SICS is a blessing compared to phaco. The incision site can always be placed based on the astigmatism of the eye. Even temporal SICS can be done in such cases if surgeon is expert in good tunnel making.

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