

THE CHALLENGE OF DIABETIC RETINOPATHY

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Magnitude of the problem:

We are today confronted with an epidemic of type 2 Diabetes Mellitus (DM). Worldwide figures for this condition are expected to reach 221 million by 2010. India harbors the largest affected population in the world. If you find this a large figure, we actually have 8 to 10% more including type 1 DM. The national urban survey of diabetes conducted in the year 2000 on a sample size of 12500, above the age of 20, in 6 major cities across India showed a prevalence of 13.2%. Studies conducted globally show a prevalence of diabetic retinopathy up to 41% in patients with diabetes. 10 year incidence of retinopathy in diabetics was as high as 90% according to the WESDR (Wisconsin epidemiological study of Diabetic retinopathy).

Needless to stress the number of patients who are going to require ophthalmic care is mind boggling. The myth of this being a rich man's or an urban disease is gradually being shattered. Unlike cataract blindness this problem is far more complicated. The problem merits periodic screening, retinal laser, recurrent follow ups and possibly vitreoretinal microsurgery. The camp approach so successful in cataract surgery is not workable here. The difficult variable is control of the disease. Physicians or pharmaceutical companies manufacturing insulin do not share the ophthalmic community's views on charity.

Role of diabetic control and physician awareness:

Two epic studies (DCCT and UKPDR) have conclusively shown the role of tight diabetic control in delaying progression of diabetic retinopathy in Diabetics. The target is to maintain glycosylated haemoglobin of less than 7. Even in the US this rigid control is found in only a small percentage of patients. In India this problem is further compounded by the cost of medication. We can safely assume that most Indian diabetics do not come under the strict control criteria

Unlike most other ophthalmic conditions which are tackled solo by the ophthalmologist, any successful attempt against diabetes is a team effort. Like in a game of cricket each department has to perform. The treating physician is the captain. He enjoys the patient's faith arising out of maximum interaction. The physician must include a yearly retinal examination by an ophthalmologist as a part of standard protocol (today an international norm). All patients diagnosed with early retinopathy should be treated with insulin with strict control, and not oral hypoglycemics. On both these counts, we as ophthalmologists have failed to pass this message to a majority of our physician colleagues. The treatment of the bad cousins of DM by the physician is equally important. Control of hypertension, statins in hyperlipidemia, management of microalbuminuria with ACE inhibitors and quitting smoking are all steps in this direction. Control of the overall disease status is finally the most decisive factor in our success with treating diabetic retinopathy.

Diagnosis:

Annual screening of all diabetics can be performed by every ophthalmologist. The frequency can be suitably increased in patients with retinopathy, being very frequent in pregnancy. Telemedicine tools can come handy in screening in rural areas. While FFA is the gold standard the diagnosis of Diabetic retinopathy with high risk characteristics and clinically significant macular edema (CSME) is essentially clinical. A careful binocular slit lamp evaluation with a 90 D lens is an invaluable tool in the hands of each one of us. A patient presenting with retinopathy and good vision needs proper counseling as he is unable to comprehend why we are advising treatment. Fundus photography, slit lamp video, FFA and OCT all help in this direction.

Laser:

If the magnitude of the problem is to be understood and solved every ophthalmologist must be able to do laser for diabetic retinopathy. The procedure is simple and anyone able to put in a 3 mirror and visualize the retina can perform it, with some training. Wide angle lenses available today make the job even easier. There are some patients where discretion is the better part of valor and services of a vitreoretina specialist should be sought. Over the last 15 years I have seen many patients who come to vitrectomy in spite of laser treatment. The commonest cause is inadequate coverage while performing laser. Most such patients have not been treated anterior to the equator up to the ora. In some eyes persistent vitreous hemorrhage prevents proper visualization and treatment of the inferior Fundus. Some patients have not complied and gone through all the sitting of retinal laser for a variety of reasons ranging from ignorance to poverty. The bottom line however is that a successful PRPC (panretinal laser photocoagulation) must ablate a significant area of ischemic retinal tissue extending from the arcades to ora, if it is to be successful. A small percentage of patients can have a downhill course in spite of a complete PRPC due to deteriorating systemic condition; especially renal failure. Proper counseling of patients for PRPC is an art. While taking care not to alarm the patient, the gravity of the situation must sink in. The purpose of treatment is prevention of severe visual loss and not primarily visual improvement. Patients may sometimes be completely off the mark, and assume that it will permanently rid them of their glasses as well! The effect on night vision and peripheral field after a PRPC can be substantial and the patient must be so informed. Finally any patient with presence of proliferative disease signing up for PRPC must be aware of the possibility of vitreous surgery should a bleed occur or traction increase due to regressing fibrovascular tissue. The DRS and ETDRS studies have well laid out criteria for performing laser photocoagulation. However in the Indian context it becomes essential to consider treatment in patients with high risk NPDR without neovascularization. Issues like poor glycemic control, uncontrolled hypertension, vitreous hemorrhage or NVG in the fellow eye, patients on anti coagulants and pregnancy can help justify this decision. The poorly compliant patient unlikely to follow up is also potential candidate.

IntraVitreous Triamcinolone(IVT):

Any literature search on Intravitreal triamcinolone lists this treatment as a panacea for wide repertoire of retinal conditions ranging from ARMD to posterior uveitis. A more conservative approach would be to consider this treatment in diabetics for eyes with refractory CSME which has not responded to laser treatment. The evidence to date is that retinal thickness as evaluated by OCT as well as by clinical techniques can be reduced by IVT and that there is some improvement in vision in some cases. It is important to know most studies are single case reports or open label interventional case series. Development of cataract and steroid induced glaucoma are recorded. The effect of treatment is transient and repeated shots may be required, a fact worth considering as it is an intraocular injection.(DR guidelines.2005 Royal college of ophthalmologists, UK)

Surgery:

Vitrectomy in proliferative diabetic retinopathy is a real test of the vitreoretinal surgeon's skill and experience. The number and diverse spectrum of cases done over a decade or more, stabilize your results. A fine line separates surgical success and failure. Till a decade ago the protocol for a non resolving vitreous hemorrhage was to conserve for 6months with periodic ultrasound. Today we intervene in 6-8 weeks. The results of the DRVS (Diabetic retinopathy vitrectomy study) have contributed to this understanding.

Newer vitrectomy techniques permit all surgeries to be performed under local block. This is an important consideration in diabetics with end organ damage where general anesthesia carries its own risk. Wide angle operating systems like the BIOM and EIBOS allow better orientation and visualization. High speed cutters with variable cutting rate and aspiration allow most of the dissection of fibrovascular membranes at the posterior pole to be done by the cutter itself. This reduces the surgical time and the number of times instruments are introduced from the pars plana. The aim of vitrectomy in PDR is to meet one or more of the following objectives. These include vitreous clearance, removal of vitreoretinal traction and endolaser. Extended objective like ILM peeling for refractory macular edema are at a nascent stage. It is important to emphasize that vitrectomy addresses the issue of vitreous opacification and/or vitreoretinal traction. Unfortunately no cure exists to renew the ischemic status of the retina.

In advanced cases the aim of the surgery is ambulatory vision. There is a rationale in operating such an eye even when there is good vision/ stable retinopathy in the fellow eye. The other eye could fall prey to venous, arterial occlusion or acute ischemic optic neuropathy all of which have no direct relation to the retinopathy status, but are more common in diabetics.

From a public health point of view, vitreoretinal surgeons are few and the equipment and consumables are expensive. Therefore the aim should be to arrest further progression by laser at an earlier stage through regular screening.

Conclusion: Over the last 15 years we have seen the number of diabetic retinopathy cases swell before our very eyes. Going through my log book I noted that diabetic vitrectomy accounted for less than 25% of my surgical practice in the first two years, now it is crossing 78%. In next few decades we are going to witness a deluge of diabetic retinopathy. Is the ophthalmic community prepared to take the challenge head on?