

The Eyes of A Child

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People with diabetes are at risk of developing complications such as eye diseases. Children are not spared either and may suffer sight-threatening cataracts and retinopathy, reports Dr Daphne Han, associate consultant, Singapore National Eye Centre.

The incidence of diabetes mellitus, both type 1 and 2, is increasing. In the Asia-Pacific region, type 2 diabetes in children is becoming increasingly common. It is in fact now four times as common as type 1 diabetes in parts of China and Japan.

In Singapore, although type 1 diabetes accounts for only 20 to 30 new paediatric cases each year, globally it is increasing at a rate of 3% in children below 15 years old. This coupled with the emergence of type 2 diabetes in children mean that action on the part of everyone will be required for its prevention, early detection and adequate treatment.

The eye, being one of the end organs, is at risk of developing complications from diabetes. These include hyperglycaemic cataracts, glaucoma, cranial and oculomotor neuropathies and retinopathy. Children are similarly at risk of developing sight-threatening cataracts and retinopathy.

Hyperglycaemic cataracts usually occur in older children but they have been seen in even one-year-olds. These are usually of the diffuse, cortical or subcapsular types. Upon examination, visual function may be decreased out of proportion to the appearance of the cataracts. These lens changes

may be reversible if blood glucose level can be brought under control within a short duration from the onset. However, there is a risk of developing amblyopia or lazy eyes before visual maturation is achieved at the age of about eight to nine years if sight-threatening cataracts persist. Care should therefore be taken to avoid lens changes in diabetic children to prevent irreversible amblyopia.

Typically, children develop sight-threatening retinopathy only after they reach puberty or older. The major complications of diabetes in the retina are retinal neovascularisation (proliferative diabetic retinopathy), diabetic macular oedema and capillary non-perfusion. All these conditions are related to the duration of chronic hyperglycaemia and are quite rare before puberty. Following puberty, the incidence of diabetic retinopathy begins to rise sharply such that 50% of patients have proliferative disease after 15 years.

Generally, children with diabetes should start having regular eye tests from the age of 12, usually after at least three years of diabetes, at a frequency of at least twice yearly during puberty. It is of paramount importance that children with diabetes be screened then for retinopathy with pupil dilatation.

It is very important that children continue with the management of their diabetes as well as possible. Poor management of the condition can be a factor in the development of diabetic complications in adulthood. In fact, even patients whose diabetes is controlled by diet, tablets or insulin can develop complications of diabetes, such as retinopathy, especially if they have had diabetes long enough. Retinopathy can also be worsened by compounding conditions of hypertension or hyperlipidaemia, and pregnancy has been known to exacerbate retinopathy.

Good diabetic control, especially if started early, dampens the rate of progression of the disease and its complications. Patients need to be encouraged to take control of their diabetes by monitoring their own blood sugars and three-monthly HbA1c. The aim is to reduce their HbA1c level as much as possible without running into the risk of hypoglycaemic attacks. This can be done by controlling the diet and taking diabetic treatment faithfully.

Studies have shown that the first signs of diabetic retinopathy in a child are microaneurysm-like spot dilatations, focal or generalised capillary dilatations, microaneurysms, leakage and retinal haemorrhages. These can be picked up by fundal photography and dilated fundoscopy. If in doubt, patients with suspicious lesions in their screening fundal photographs should be referred for specialist opinion. This measure will ensure that early treatment is instituted if necessary.

Another point to note is that as diabetic children enter into young adulthood, they have certain concerns that need to be addressed. One of these is pregnancy. Pregnant women without advanced diabetic proliferative diabetic retinopathy are unlikely to develop exuberant proliferation and severe visual loss, but pregnant women with active proliferative disease are at significant risk.

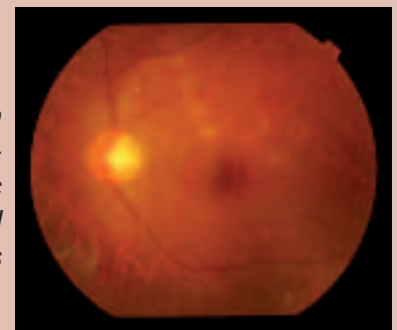
Women with background disease are at risk for both proliferative disease and diabetic macular oedema. Follow-up examination of diabetics should be every one to two months during pregnancy. If necessary, treatment in the form of laser photocoagulation of the retina may be instituted with no known harm to the foetus to prevent and retard visual loss.



Also, in an era where laser refractive surgery such as Lasik is commonplace and affordable, diabetic young adults with refractive error need to be reminded that their diabetes is a contraindication for laser refractive surgery. Their wound healing may be altered, which could lead to poor visual outcome after such procedures from development of haze and poor flap healing. They should, hence, correct their refractive error conservatively with glasses.

In summary, children with diabetes have a high risk of developing diabetes-related eye problems, especially during and after puberty. It is therefore important that all involved in their care refer them early for diabetic retinopathy screening since prevention, as always, is better than cure.

Fundal photograph showing non-proliferative diabetic retinopathy and hard exudates



Fundal photograph showing diabetic retinopathy (maculopathy) with laser marks

