Acute Bilateral Cataract in Patient with Type 1 Diabetes Mellitus and Celiac Disease

Ashish Kumar Bhagat¹, Harnoor Bhardwaj², Bachan Lal Bhardwaj³, Sanjay Goyal¹, Salil Jaura⁴, Pallav Jain⁴

Introduction

Cataract represents one of the most frequent eye complications in type 1 DM and type 2 DM patients; contrarily, acute cataract in young diabetic patients occurs very rarely. Only few cases with acute bilateral cataract - all relatively shortly after the diagnosis of type 1 DM have been reported. It can affect visual acuity from slight visual impairment to complete blindness. Although usually associated with chronic hyperglycaemia, it may also occur on rapid restoration of euglycaemia. Early detection of diabetes and adequate glycaemic control, particularly in female adolescents, may prevent this debilitating complication of diabetes.

Case Report

A 21-year-old female was diagnosed as type 1 DM/Celiac disease 3 yrs back when she presented with complaints of polyuria, polydipsia, weight loss and put on insulin therapy. 3 months back patient developed sudden blurring of vision in both eyes which progressed over a duration of 7 days. On ophthalmologic examination visual acuity was found to be restricted to hand movements in both eyes. There was no history of previous eye problems and visual acuity was normal in both eyes at the start of treatment. Slit-lamp biomicroscopy revealed dense cortical cataracts bilaterally. No fundus problems and visual acuity was normal to hand movements in both eyes.

Discussion

Young patients with diabetes mellitus can present with eye problems during the early course of the disease and treatment. The exact mechanism of diabetic cataract is not known although it is thought to be related to poor glycaemic control and abnormalities in the polyol pathway. Reduction of glucose to sorbitol by aldose reductase (AR) leads to accumulation of sorbitol, which produces osmotic stress. It also produces oxidative stress by depleting cofactor NADPH that is an important cofactor for regeneration of reduced glutathione (GSH). Some authors also mention the probable importance of genetic factors in their case studies but the mechanism is still poorly understood. Some other researchers have suggested that rapid glycaemic improvement on institution of insulin therapy leads to a hypoxic phenomenon which may also affect the activities of the protective enzymes in the lens, resulting in increased oxidative stress and subsequently to acute cataract formation. The factors associated with cataract in young persons with diabetes include high HbA1c levels, adolescence and female gender. A female preponderance has been suggested in various case series on acute cataracts and newly diagnosed cases of type 1 diabetes.

Conclusion

In conclusion, acute-onset visual loss from cataracts is an unusual manifestation of type 1 diabetes. These cataracts once developed can be irreversible in spite of good metabolic control and require surgical intervention. Clinicians should stress on adequate and gradual control of hyperglycaemia in newly diagnosed type 1 diabetes adolescents while at the same time balancing the risk of rapid glycaemic control in these patients.

Abbreviations

DM: Diabetes mellitus; NV: Normal value; FPG: Fasting plasma glucose; NADPH: Nicotinamide adenine dinucleotide phosphate.

References