Case Report

Bilateral Early Cataracts in Type 1 Diabetes

Lt Col R Pakhetra*, VP Jyotsna⁺

MJAFI 2009; 65 : 71-72

Key Words : Type 1 diabetes mellitus; Bilateral early cataracts

Introduction

Patients of diabetes have an increased incidence of cataract formation, which is usually higher in those with a longer duration of disease. Reported prevalence of cataracts in young diabetic patients is less than 1% [1]. Appearance of bilateral cataracts as first presentation leading to the diagnosis of diabetes is unusual with only a few cases reported in literature. We report two cases of early diabetic cataracts.

Case 1

A 21 years old lady developed progressive diminution of vision in both eyes over a period of 10 weeks, with rapid deterioration in the last two weeks. She also gave history of polydipsia and polyuria starting about 4 weeks after onset of diminution of vision. There was no history of trauma, infection, exposure to radiation, or family history of diabetes. Initial examination revealed bilateral cataracts with vision reduced to finger counting at 2 meters (Fig. 1). Physical examination was otherwise unremarkable. Blood glucose on admission was >400 mg/dl and ketonuria was detected. She had no evidence of proteinuria or neuropathy. Fundus could not be visualized due to presence of dense bilateral cortical cataracts. She was rendered euglycemic with insulin injections. She underwent successful cataract extraction, and intraocular lens implantation bilaterally with complete restoration of vision. Repeat examination revealed no retinopathy.

Case 2

A 20 years old lady developed osmotic symptoms with easy fatigability and was diagnosed to have diabetes. She was prescribed premix insulin and her symptoms resolved

Fig. 1 : Patient at presentation: bilateral mature cataracts

gradually. She remained on irregular follow up at a private clinic. Five months later, she developed progressive, rapid diminution of vision which was restricted to perception of light and reported to our hospital. She had bilateral mature cataracts and deranged glycemic control. Her HbA_{1c} was 16.1%. Systemic examination and other biochemical parameters including thyroid function were within the normal range. There were no other diabetic complications. After normalization of glycemic profile, she underwent successful cataract extraction with complete restoration of vision. No evidence of retinopathy was found following surgery.

Discussion

Cataract is a clouding or opacification of the normally clear crystalline lens of the eye. Cataracts occur earlier in life and progress more rapidly in the presence of diabetes. Diabetic or metabolic cataracts are characterized by diffuse posterior and/or anterior, subcapsular or cortical 'snowflake' opacities [2]. This is followed by appearance of more diffuse cloudiness and opacification.

The pathogenesis of diabetic cataracts in humans is not well understood. Prolonged duration of symptoms before treatment is thought to play a role. Hyperglycemia alone may not be the only factor, as not all patients develop cataracts and good glycemic control may not protect from cataract formation [1]. Other factors such as genetic propensity, nutritional status and use of drugs like steroids may be contributory [3].

Osmotic stress, induced by sorbitol accumulation in the lens via polyol pathway, seems to be the major culprit in the development of acute diabetic cataract. Other factors could be the non-enzymatic glycation of lens proteins and oxidative stress [4]. Ketoacidosis could further decrease availability of antioxidants and promote cataractogenesis. Despite a reported higher incidence of Type-1 diabetes in male patients in most studies, most series have found a female preponderance for diabetic cataract, the reason for which is not clear [5].

*Classified Specialist (Medicine & Endocrinology), Base Hospital, Delhi Cantt 110010. ⁺Asst Professor (Department of Endocrinology & Metabolism), All India Institute of Medical Sciences Ansari Nagar, New Delhi 110029.

In the cohort of Dutta et al [2], three of five patients with Type I diabetes who developed cataracts close to the diagnosis of diabetes were female. All had a prolonged duration of symptoms and high HbA_{1c}. Wilson Jr et al [5] reviewed the medical records of 14 patients with diabetes and cataracts from 7 institutions, spanning roughly 10 years. Eleven of their patients were female. In another series, eight of nine patients of diabetes with cataract were female [3]. Both of our patients were also female. An exception is the series of Costagliola et al [4].

Although the relation between cataract formation and diabetes mellitus is well established in literature, development of bilateral cataracts acutely after diagnosis of diabetes mellitus is rare. Flack et al [1], in a retrospective analysis of 600 pediatric diabetic patients found a prevalence of 1% bilateral cataracts (6/600).

There are a small number of reports of bilateral cataracts developing soon after diagnosis of diabetes [2-8].

Cornwell et al [6] reported a case of 19 year old newly diagnosed patient of diabetes with normal ophthalmic examination at presentation, developing bilateral cataracts requiring surgery within six weeks. Seven of fourteen patients in the series of Wilson Jr et al [5] developed cataracts shortly after being diagnosed to have diabetes. Similar early development of cataracts has been reported by others also [7,8].

Bilateral cataracts as presentation of diabetes have also been reported, though less frequently [3,5,9,10]. Santiago et al [9], reported a nine years old girl who presented with sudden onset progressive diminution of vision over 11 days. A diagnosis of diabetes was established and history of osmotic symptoms elicited in retrospect.

Scarpitta et al [10] reported a 14 yrs old girl with no antecedent illness or family history of diabetes, who was hospitalized for cataract removal and subsequently diagnosed to have diabetes. In the cohort of Wilson Jr et al [5] bilateral cataracts were present in some, while others had sequential involvement of the other eye.

We report two cases of Type I Diabetes, one with bilateral cataracts as initial presentation, and the other developing bilateral cataracts a few months after diagnosis. Though reported previously, appearance of bilateral diabetic cataracts at the time of diagnosis is still an unusual feature. Possible risk factors for early cataract development could include prolonged symptoms before treatment, elevated HbA_{1c} levels, ketoacidosis, and female sex.

Thus we recommend that newly diagnosed patients with Type 1 diabetes should also be screened for ocular involvement. Conversely, the appearance of lens opacities in young patients should alert the ophthalmologist to the existence of diabetes.

Conflicts of Interest

None identified

References

1. Falck A, Laatikainen L. Diabetic cataract in children. *Acta Ophthalmol Scand* 1998; 76: 238-40.
2. Dutta V, Swift PGF, WoodRuff GHA, Harris RF. Metabolic cataracts in newly diagnosed diabetes. *Arch Dis Child* 1997; 76:118-20.
3. Montgomery EL, Batch JA. Cataracts in insulin-dependent diabetes mellitus: Sixteen years' experience in children and adolescents. *J Ped Child Health* 1998; 34:179-82.
4. Costagliola C, Dell'Omo R, Prisco F, Iafusco D, Landolfo F, Parmeggiani F. Bilateral isolated acute cataracts in three newly diagnosed insulin dependent diabetes mellitus young patients. *Diabetes Res Clin Pract* 2007; 76 :313-5.
5. Wilson ME Jr, Levin AV, Trivedi RH, et al. Cataract associated with type-1 diabetes mellitus in the pediatric population. *J AAPOS* 2007; 11:162-5.
6. Cornwell M, Lepre F. Acute irreversible cataracts in diabetes mellitus. *Aust N Z J Ophthalmol* 1995; 23 (3): 221-2.
7. Awan A, Saboor T, Buchanan LM. Acute irreversible diabetic cataract in adolescence: a case report. *Eye* 2006; 20 :398-400.
8. Florkowski AR, Golden R, Sooch Y, Krishna R. Sudden bilateral visual loss in a diabetic man. *Am J Med Sci* 2005; 329 :99-101.
9. Santiago AP, Rosenbaum AL, Masket S. Insulin-dependent diabetes mellitus appearing as bilateral mature diabetic cataracts in a child. *Arch Ophthalmol* 1997 ; 115 : 422-3.
10. Scarpitta AM, Perrone P, Sinagra D. The diabetic cataract: an unusual presentation in a young subject: case report. *J Diabetes Complications* 1997; 11: 259-60.