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Acute Bilateral Cataract in a 14-Year Old Refugee with Severe Malnutrition and Poorly-Controlled Insulin-Dependent Diabetes Mellitus

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ABSTRACT

Aim: *to report the case of blindness from acute bilateral cataract in a refugee girl who underwent successful cataract surgery after management of malnutrition and poorly-controlled insulin-dependent diabetes mellitus (IDDM).*

Report: *A 14-year old refugee girl with poorly-controlled IDDM was referred to our eye clinic for the management of bilateral leukocoria. She was admitted into a paediatric unit where she was receiving treatment for urinary tract infection and severe chronic malnutrition. Manual small incision cataract surgery was done after the infection was treated, severe malnutrition was managed, and blood sugar was controlled. Visual outcome was good and there was no diabetic retinopathy.*

Conclusion: *Patients with IDDM should undergo an initial ophthalmological screening as well as follow-up examinations. Awareness on blinding complications of IDDM should be raised amongst health care givers to displaced persons in order to permit early referrals and avoid blindness.*

Keywords

Cataract, Diabetes, Malnutrition.

Introduction

Cataract is uncommon in insulin-dependent diabetes mellitus (IDDM) patients. These metabolic cataracts though rare, may occur as the first manifestation of diabetes [1,2] or occur at the onset of the disease, within months or even weeks following the diagnosis [3]. They usually occur before diabetic retinopathy [3,4]. They may be transient if diagnosed early and appropriate blood glucose control measures taken [5-7]. Most cases reported in the literature are irreversible and surgery is required. A case of pharcomorphic glaucoma occurring in acute cataract has been reported [8]. Prolonged duration of symptoms (polydipsia, polyuria, polyphagia) before the diagnosis of IDDM is a risk factor for the development of metabolic cataracts [9,10].

In contexts of insecurity, public health interventions and the delivery of health care are more difficult to perform and less likely to succeed [11]. Social insecurity leads to food insecurity. Providing food and adequate medical care for patients with IDDM in a refugee camp could be challenging.

We present the case of a 14-year severely malnourished refugee, from a refugee camp, with poorly-controlled IDDM, who presented with bilateral blindness from acute bilateral cataracts in both eyes 3 months after diabetes was diagnosed. Ophthalmological examination was done 7 months following loss of sight and bilateral white cataract was diagnosed. We report this rare case in order to increase awareness on the need for IDDM patients to be screened for ocular involvement.

Case Presentation

A 14-year-old refugee girl was referred to our eye unit for the management of bilateral leukocoria. She was admitted into a paediatric unit for altered level of consciousness, fever and high

blood sugar. She was referred from a district hospital close to the refugee camp in which she lived with her mother.

She was diagnosed of IDDM one year before, after 2 months of polyuria and polydipsia. She reported loss of sight about 3 months after the diagnosis of IDDM. She is the 3rd child in a family of 10 children, of whom 3 are alive. They fled the conflict in the Central African Republic and for the past 4 years, have been living in a refugee camp in the East region of Cameroon.

Upon admission in the paediatric unit, diabetes control was poor (blood sugar of 4.4g/l and glycated hemoglobin of 12%). She was diagnosed of urinary tract infection (*E. coli* on urine culture) and severe malnutrition (weight 19kg; height 133 cm; body mass index of 10.7 kg/m², -5.5 SD for age). The initial ophthalmic examination revealed light perception in both eyes and bilateral leukocoria (Figure 1). The corneas were transparent, and pupils were round and equally reactive to light. White cataract was present in each eye and fundus was not visible.

Figure 1: Bilateral leukocoria from white cataracts.

One month after admission, she underwent bilateral manual small incision cataract surgery under general anaesthesia. Biometry for the power of the intraocular lens was done before surgery. The surgical procedure for each eye was as follows: the anterior capsule was stained with trypan blue through a side port incision and capsulorrhexis was done under viscoelastic. A frown-shaped half-thickness scleral incision was done 1.5mm behind the limbus after conjunctival peritomy. This incision was dissected anteriorly to form a tunnel 1mm into the clear cornea and the anterior chamber was entered. Gentle hydrodissection was done and the lens matter was aspirated manually using Simcoe's canula. PMMA one-piece intraocular lens was implanted in the bag following viscoelastic injection. Irrigation and aspiration of viscoelastic material was done. The self-sealing nature of the main incision was verified and the corneal stroma around the side port was mildly hydrated. Mild cautery was used to close the peritomy, this was followed by subconjunctival injection of gentamycin and dexamethasone. Steroid and antibiotic ointment was applied, and the eye was patched.

In the post-operative period, steroid-antibiotic eye drop was applied hourly in the first 48 hours and then 5 times daily. Indomethacin eye drops was given tid, prednisolone 20mg per os once daily. Figure 2 shows the patient's appearance after surgery. Blood sugar was monitored, and insulin dosage adjusted accordingly. The fifth post-operative day was marked by raised intraocular pressures (32mmHg OD and 30mmHg OS). Carteolol 2% slow release eye drops was given once daily and ¼ of Acetazolamide 250mg tablet was given tid. Uncorrected distant visual acuity was 0.5 in both eyes, there was onset of posterior capsular fibrosis. After 2 weeks, intraocular pressures were 13.7mmHg OD and 15.7 mmHg OS. Acetazolamide was discontinued and steroid drop was tapered off. Indomethacin was to be continued for up to 3 months. Dilated fundus examination was normal. Patient education for diabetic control was improved as visual communication was introduced.

Figure 2: Clear visual axes after bilateral cataract surgery.

The patient was discharged and returned to the refugee camp. The officials in charge were informed of the need to bring her back after 3 months for laser capsulotomy and refraction.

Discussion

The prevalence of diabetic cataract is 1% in the paediatric diabetic population [12]. Acute cataract in IDDM is rare and its pathogenesis is incompletely understood. Studies support the important contribution of increased aldose reductase activity [13,14]. In the case of hyperglycaemia, the polyol pathway is activated in which glucose is converted to sorbitol. The accumulation of intracellular sorbitol exerts osmoprotection against the hyperosmolar extracellular milieu, thus preventing cell shrinkage. The accumulation of sorbitol within the lens, causes an increased osmotic load within the lens causing swelling, fibre breakdown, and opacification. It has been postulated that the prolonged exposure to hyperglycaemia (due to the long duration of symptoms before diagnosis) induces increased synthesis of aldose reductase which is associated to the formation of metabolic cataracts [9]. Our patient presented with polyuria and polydipsia 2 months before the diagnosis of IDDM was made.

Because acute cataract is uncommon, other mechanisms, including non-enzymatic glycation of proteins and oxidative stress, may also be responsible for lens opacification. Elevated level of glycated haemoglobin is a common finding in acute cataract in IDDM patients [15,16]. The relative risk of developing cataract increases with rising glycated haemoglobin levels [17]. Malnutrition in our patient may also have played a role in the development of

cataract as deficiencies of micronutrients are said to directly affect the antioxidant systems in the lens. In the Lens Opacities Case-Control Study, dietary intake of riboflavin, vitamins C, E, and carotene (which have antioxidant potentials), as well as intake of niacin, thiamine, and iron were protective for cataract [18].

Surgical extraction is the only cure of diabetic cataract and is sight-saving. Phacoemulsification is associated with better visual results, less inflammation and less need for capsulotomy [19]. Given the unavailability of phacoemulsification in our setting, manual small incision cataract surgery was done with lens implanted in the capsular bag in order to restore sight in this patient. Surgery was done in one session in order to minimize cost. Patient education was enhanced by visual communication following sight restoration. This also had an impact on the quality of life as the patient was no longer dependent due to blindness.

Conclusion

In this case, bilateral acute cataract was diagnosed at the stage of blindness. Improved vision following cataract surgery led to better patient education for the management of diabetes and led to improved quality of life. Awareness amongst health care providers in refugee camps should be raised on the need to refer patients for ophthalmic examination at diagnosis and plan follow-up visits. A prompt review is essential in cases with persistent poor diabetic control and/or blurred vision.

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References

1. Suzuki Y, Atsumi Y, Matsuoka K, et al. Acute metabolic cataract as a first manifestation of diabetes mellitus in a 12-year-old girl. Diabetologia. 2004; 47: 592-593.
2. Taskapili M, Gulkilik G, Ozsutcu M, et al. Acute bilateral dense cortical cataracts as a first manifestation of juvenile diabetes mellitus in a 12-year-old girl. J Pediatr Ophthalmol Strabismus. 2008; 45: 177-178.
3. Costagliola C, Dell'Omo R, Prisco F, et al. Bilateral isolated acute cataracts in three newly diagnosed insulin dependent diabetes mellitus young patients. Diabetes Research and Clinical Practice. 2007; 76: 313-315.
4. Geloneck MM, Forbes BJ, Shaffer J, et al. Ocular complications in children with diabetes mellitus. Ophthalmology. 2015; 122: 2457-2464.
5. Phillip M, Ludwick DJ, Armour KM, et al. Transient subcapsular cataract formation in a child with diabetes. Clin Pediatr (Phila). 1993; 32: 684-685.
6. Trindade F. Transient cataract and hypermetropization in diabetes mellitus: case report. Arq Bras Oftalmol. 2007; 70: 1037-1039.
7. Jin YY, Huang K, Zou CC, et al. Reversible cataract as the presenting sign of diabetes mellitus: report of two cases and literature review. Iran J Pediatr. 2012; 22: 125-128.
8. Skrabic V, Ivanisevic M, Stanic R, et al. Acute bilateral cataract with phacomorphic glaucoma in a girl with newly diagnosed type 1 diabetes mellitus. J Pediatr Ophthalmol Strabismus [Internet]. 2010; 48: E1-E3.
9. Datta V, Swift P, Woodruff G, et al. Metabolic cataracts in newly diagnosed diabetes. Arch Dis Child. 1997; 76: 118-120.
10. Montgomery EL, Batch JA. Cataracts in insulin-dependent diabetes mellitus: sixteen years' experience in children and adolescents. J Paediatr Child Health. 1998; 34: 179-182.
11. Coupland R. Security, insecurity and health. Bull World Health Organ. 2007; 85: 181-184.
12. Falck A, Laatikainen L. Diabetic cataract in children. Acta Ophthalmol Scand. 1998; 76: 238-240.
13. Obrosova IG, Chung SSM, Kador PF. Diabetic cataracts: mechanisms and management. Diabetes Metab. Res. Rev. 2010; 26: 172–180.
14. Lightman S. Does aldose reductase have a role in the development of the ocular complications of diabetes? Eye (Lond). 1993; 7: 238-241.
15. Pakhetra R, Jyotsna V. Bilateral early cataracts in type 1 diabetes. Med J Armed Forces India. 2009; 65: 71-72.
16. Goturu A, Jain N, Lewis I. Bilateral cataracts and insulin oedema in a child with type 1 diabetes mellitus. BMJ Case Rep [Internet]. 2013; 2013.
17. Iafusco D, Prisco F, Romano MR, et al. Acute juvenile cataract in newly diagnosed type 1 diabetic patients: a description of six cases. Pediatr Diabetes. 2011; 12: 642-648.
18. Leske MC, Chylack LT, Wu SY. The Lens Opacities Case-Control Study. Risk factors for cataract. Arch. Ophthalmol. 1991; 109: 244-251.
19. Dowler JG, Hykin PG, Hamilton AM. Phacoemulsification versus extracapsular cataract extraction in patients with diabetes. Ophthalmology. 2000; 107: 457-462.