STUDY OF TRAUMATIC CATARACT IN OCCUPATIONAL AND ENVIRONMENTAL TRAUMA AND ITS MANAGEMENT

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ABSTRACT

Sixty cases of traumatic cataract in 5 years due to occupational and environmental hazards were studied to highlight mode of trauma, structural damage; management profile and final visual outcome. Thirty six (60%) cases had mechanical trauma whereas 18 (30%) cases had injuries due to non metallic or organic substances. Industrial accidents were responsible in 25 (41.66%) cases. Forty four cases (73.3%) had associated anterior segment injuries. Reconstruction of anterior segment with Posterior Chamber Intraocular lens (PC IOL) implantation could be done in 42 (70%) cases as primary or secondary procedure. Adherent leucoma, iridal trauma, posterior capsular tear and dislocated lens were noted problems. Forty six (76.67%) cases had attained 6/12 or better corrected visual acuity. Defective visual gain was due to corneal opacities and post operative complications.

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KEYWORDS : Environmental trauma; Occupational trauma; Traumatic cataract.

Introduction

Ocular trauma is one of the most common cause of preventable blindness [1,2]. Advancement in industries, farming; sport activities and change in domestic environment has resulted in altered pattern of ocular injuries in our circumstances [1,3]. Sixty cases of traumatic cataract in 5 years due to occupational and domestic hazards were studied to highlight mode of trauma, structural damage and ultimate visual outcome. Preventive aspects of these injuries were also studied to formulate directives so as to minimize severity and occurrences of such injuries.

Material and Methods

For the purpose of evaluation, 60 cases of traumatic cataract due to occupational, environmental and domestic hazards; managed in last 5 years were included in this study. Period of this study was 3 years. Evaluation was based on nature and mode of trauma, type of object leading to trauma with specific structural damage and its effect on surgical management. Standard surgical norms like detailed pre-operative clinical and investigative evaluation followed by reconstruction of anterior segment if required and PC IOL implantation was preferred as primary or secondary procedure in all cases. Preventive aspects of such injuries were also analysed.

Results

Study of pattern of ocular injuries had revealed industrial trauma as a most significant causative factor in 25 cases (41.66%)

followed by environmental trauma in 19 cases (31.67%). Remaining 16 cases (26.67%) had traumatic cataract due to domestic accidents. Thirty six cases (60%) had penetrating injuries.

There were no significant variations in trend of penetrating or blunt injuries in different mode of trauma in this series. Hammer chips resulted in penetrating injuries in 10 cases (40% of total industrial accidents) followed by cut metal wire and metallic pieces (Table 1). Accidental indirect hit of flying objects was leading cause of blunt injuries in 5 of 8 cases of industrial accidents.

Grass and wood pieces while cutting had resulted in maximum penetrating injuries in 5 of 19 cases of environmental trauma (Table 2). Domestic injuries were mainly in children and adolescents. Accidental hit of scissors (4 cases) and needles (6 cases) were leading factors in such cases (Table 3).

Traumatic cataract was invariably associated with other ocular injuries (Table 4). Forty four cases (73.3%) had added adnexal or anterior segment injuries. Corneal tear (24 cases) and uveal prolapse in 18 cases were most common involvements. Twenty cases (33.33%) of traumatic cataract had subluxation (16 cases) or posterior dislocation of lens (Table 4). Such structural damage had produced derangement of ocular configuration leading to significant operative constraints namely posterior capsular tear in 22 (36.66%) and secondary glaucoma in 13 (21.66%) cases (Table 5).

Forty six patients (76.67%) had attained corrected visual acuity of 6/12 or more. Ten patients (16.67%) had achieved visual acuity ranging between 6/18 and 6/36. Remaining 4 patients (6.66%) had poor visual outcome mainly due to high astigmatism or posterior segment problems.

Discussion

In our study, penetrating injuries were more com-

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TABLE 1

Industrial accidents : Type of injuries and common objects leading to ocular trauma in 25 patients

Objects/types	No of cases involved	% of all ocular trauma
Penetrating injuries	17 (68%)	28.33%
Hammer chips	10	
Cut metal wire	4	
Metallic pieces	3	
Blunt trauma	8 (32%)	(13.33%)
Accidental hit of flying objects	5	
Instrumentation	3	
Total no of cases	25	41.66%

TABLE 2

Agricultural/environmental trauma : type of injuries and common objects leading to ocular trauma

Objects/type of injuries	No of cases involved	% of all ocular trauma
Penetrating	10 (52.63)	16.67
Grass/wood pieces while cutting	5	
Wood chips	3	
Thorn	2	
Blunt		
Stone/foreign body	9 (47.37)	15
Total	19	31.67

TABLE 3

Type of injury and domestic objects leading to ocular trauma

Objects/nature of injury	No of cases	% Domestic accidents	% Total cases
Blunt trauma	7	43.75	11.67
Scissors	4		
Toys	3		
Penetrating injuries	9	56.25	15
Needle	6		
Nails	2		
Sharp objects	1		
Total	16		26.67

mon than blunt injuries. This was comparable in all 3 groups with significant skew towards penetrating injuries. Various other studies have also reported same pattern [1,4,8,9]. Accidental hit of hammer chips while hammering remained leading cause of penetrating injuries in various reports [4,8,2,4,9] followed by injuries due to sharp domestic articles like sewing needle, scissors. Any sharp objects like scissors, needle, domestic articles should not be made available to the children as they carry very high risk of injuries [4].

TABLE 4

Structural damage in ocular injuries - 60 patients (associated with traumatic cataract)

Structural involved	No of cases	%
Anterior segment injuries	44	73.3%
Adnexa	6	
Corneal tear	24	
Limbal	6	
Uveal (prolapse/dialysis)	18	
Lens	20	33.3%
Subluxation	16	
Posterior dislocation	4	

% Varied due to single or multiple structural involvement found in particular case

TABLE 5

Operative problems in 60 patients in trauma induced cataract

Pre-existing ocular involvement	No of cases	%
Adherent leucoma	7	11.67
Iridal trauma	9	15
Secondary glaucoma	13	21.66
Posterior capsular tear	22	36.66
Vitreous prolapse	9	15
Posterior dislocation	4	6.66
Subluxation of lens	16	26.66

% and no of cases varies due to single or multiple involvement in a particular case.

Children should not be allowed to play with toys made up of hard materials or having sharp objects.

Management of traumatic cataract in occupational and environmental trauma has several problems at every step of management as compared to management of any other cataract. Traumatized-eye has its own altered anatomical and physiological configuration [5,10]. Posterior capsular tear, sub-luxation of lens and secondary glaucoma were significant hurdles in present study. Adherent leucoma, uveal injuries and vitreous prolapse had negative impact while attempting primary IOL implantation. Reconstruction of anterior-segment with primary PC IOL implantation was preferred surgical approach in traumatic cataract over secondary PC IOL implant. However, where PC IOL implantation was not possible, secondary PC IOL implantation was attempted after 6 to 8 weeks. This could be done after creation of bag between fibrous rim of capsular frill and retro-iridal space. Primary PC IOL implantation can be performed in cases with zonular dialysis of less than one quadrant or small posterior capsular tear of less than 3 mm. This could be achieved by avoiding axis of zonular dialysis or tear with inserting IOL perpendicular to it [4,6]. Support of large anterior capsular flap can also be availed

in cases of zonular dialysis and subluxated lens [4,6]. Correction of residual optical error and regular follow up is very essential to maintain sustained visual gain since traumatic cataract is associated with high risk of post operative uveitis, secondary glaucoma and after cataract [4,6,7]. Such devastating complications may reverse the process of good visual recovery into irreversible visual loss [7,8,3]. In our study, 46 (76.67%) cases had attained good corrected visual acuity of 6/12 or more. Ten cases (16.67%) could attain visual acuity ranging between, 6/36 to 6/18. However, 4 (6.66%) had poor visual outcome. Nebular corneal opacities, high oblique astigmatism and delayed posterior segment derangement were noted problems. Improper optical compliance and subsequent amblyopia were other hurdles [7,10,4]. However, meticulous follow up, management of delayed sequelae and complications were given due attention to with-hold initial good visual gain [4,10].

In our view, management of traumatic cataract has 3 steps namely judicious evaluation of preoperative constraints, intraoperative tissue respect and most important is constant and meticulous follow-up so as to evaluate and manage delayed changes and interrupt the process of irreversible visual damage. These injuries could have been minimized by due care, health education on preventive aspects of ocular trauma as well as use of safety devices while working in industries or accident prone occupations [2]. Awareness of inherent danger towards susceptible domestic and en-

vironmental objects, may also reduce the risk of traumatic cataract.

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