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SEVERE EYE INJURY IN AN 11-YEAR-OLD CHILD DURING THRESHING – A CASE REPORT

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Abstract: A case is reported of severe eye injury in an 11-year-old boy which occurred during threshing in the parents' farmyard. A detailed description of surgical treatment, complications and 7-year follow-up is presented. Despite long lasting treatment and new surgical methods used, the eye became blind. On the basis of our experience we can conclude that adequate adult supervision of children is mandatory during work in farmyards, and this is probably the only way to avoid at least a part of severe injuries which cause great social and economic losses.

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INTRODUCTION

Ocular injuries have been identified as a major cause of blindness, specifically in the first two decades of life [6]. In studies of ocular injuries that include all age groups, the rate of ocular injuries in children under 15 years old varied from 21.4–47.3% [5, 7, 9].

A case is presented of severe eye injury in an 11-year-old child which occurred during threshing in a farmyard.

CASE DESCRIPTION

On 17 August 1998, an 11-year-old boy (KD) with a severe, penetrating eye injury was admitted to the 1st Eye Hospital, Medical University of Lublin. According to the opinion of his father, the boy has fallen on a harvest heap and injured his left eye with leaf of wheat. The accident happened during threshing. Severe corneal laceration with iris incarceration and lens damage was noticed at the clinical examination. The visual acuity was counting fingers from 1 m. Corneal wound surgical repair was performed the same day. Ten days later, additional anterior chamber surgery (synechiotomy) was carried out and the boy was sent home after 2 weeks hospitalization. Three weeks later, retinal detachment on the same eye developed and on 12 November 1997 circumferential scleral buckling was applied. The treatment was not successful and pars plana vitrectomy with silicone oil injection was performed on 25 November 1997. During the next 3 years, the eye did well with visual acuity of 0.25. On February 2001, the visual acuity dropped to counting fingers from 1 m, and retinal redetachment involving the macula with signs of proliferative vitreoretinopathy (PVR) was noticed. On 13 March 2001, the next surgical procedure, retinotomy with silicone oil exchange, was performed. Despite the retinal attachment, the visual acuity was very poor for hand motions in front of the eye. Two years later, partial retinal detachment with PVR and visual acuity of light perception was noticed. On 10 November 2005, seven years after initial eye injury, an accidental blunt eye trauma by an elbow of his friend in the school bus caused the eye to rupture at

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the site of the old corneal scar. Emergency repair surgery was performed in our department the same day. Despite this surgical treatment the eye became blind.

DISCUSSION

On a family agricultural farm children also take part in household and farm activities. Their participations can be of both passive and active character. The former, also discussed in our study, results from the presence of the child within the sphere of activities performed by the adults, and although the child does not perform work it is affected by various environmental factors connected with agricultural duties, often harmful for health. An active part of children in agricultural activities consisted in carrying out certain jobs or in helping adults perform their jobs.

A farm-environmental injury, according to Schelp, is a work-related or nonwork-related injury that has occurred on a farm/rural property and has caused injury to a person living on a farm or visiting a farm [12]. High level of mechanization of work on farms, seems to be the main reason for an increased number of accidents, especially among children, who are not able to recognize all the dangers.

According to Schenker (California, USA), 30% of all fatal accidents among children on farms were caused by tractors and self-propelled machines [13]. Cogbill *et al.* (Wisconsin, USA) have analyzed 105 cases of children treated after trauma occurred on farms. The mechanism of injury was animal related in 40%, tractor or wagon accident in 26%, farm machinery in 20%, fall from farm building in 6% and miscellaneous in 8% [2].

Bujak *et al.* (1998) have shown that head injuries occurred in 9.7% of all injuries among children on farms. The prevalence was equal in boys and girls groups. Eye injuries were quite rare (1.1%) and occurred more often in boys group [1].

Little data exists in literature about eye injuries to children from the agricultural environment [6, 8, 9, 11].

In the series presented in 1984 by Saari and Aine (Finland), perforating eye injuries in children occurred in 8.3% of all perforating injuries in agriculture [11]. In our study from 2005, the rate was very similar - 7.1% [8].

Our presented case is an example of severe eye injury in an 11-year-old boy who was passively involved by his presence in the zone of adults' threshing activities. The accident took place in August, a typical month for injuries in agriculture [8, 10, 11]. Inadequate adult supervision in this case was the only reason for the severe eye injury, late complications and consequences. The child was hospitalized 6 times during 7 years and spent 65 days (mean 10.8) in the hospital. The eye was operated on 6 times and preserved good visual acuity over 3 years after initial injury. Due to complications developed during the subsequent years involving anterior and posterior segment of the eye and despite intensive surgical treatment, the eye became blind. Moreira *et al.* pointed out in their epidemiological study of eye injuries in Brazilian children, that all eyes with major laceration of the globe, involving anterior and posterior segments, including lens damage and vitreous loss, ended with no useful vision [9]. An additional risk factor of unsuccessful results of treatment is progressive proliferative vitreoretinopathy (PVR), and disastrous complication often occurred in such cases [15]. The rate of blindness among different occupational groups after penetrating eye injuries in literature varied from 31-62% [3, 4, 7, 10].

Many authors consider adult supervision to be extremely important in preventing accidents [9, 14]. Moreira *et al.* found no adult presence in 73.0% of severe eye injuries in children. In an additional 21.6% of severe cases, an adult was present but was not alert to the child. In only 5.4% of these cases was an adult present and actively caring for the child [9]. Our presented case is an example of a situation when inadequate adult supervision was present. The Moreira group also showed an inverse relationship between severity of eye injuries and family income level and education of the parents [9].

The injury of the left eye in our presented patient caused blindness of the eye and limited the possibility of performing many jobs. According to Polish regulations, one eyed patients can not work at a height above 3 m, operate machines in motion (e.g. a lathe, a grinder, mechanical saw) or work as professional drivers. Besides, they can not undertake work with devices equipped with screen monitors. The above examples show how restricted the possibilities are for employment available to the patient described here, both for manual and nonmanual jobs (computer operation).

In Poland, perhaps due to a long tradition of childrens' help in farming duties, there are no legal regulations forbidding children to assist their parents on the farm. The information booklet of the Agricultural Social Insurance Fund (KRUS) lists 23 especially dangerous jobs and activities, that should not be undertaken by children under 15 years of age in the farmyard and fields. In spite of this, every year over a 1,000 farmers' children sustain injuries during such activities among machines and domestic animals. Several children are killed every year [5].

CONCLUSIONS

In presenting the case of a severe eye injury in an 11-year-old boy who, despite intensive treatment, lost the sight in the eye we wanted to draw attention to a still existing serious problem. We are sure that children under 15 years not only should not work in farmyards, but they should not stay in the area of work with machines, because working adults are not able to supervise them at the same time.

With regard to prevention, continuous and efficient education by the parents and custodians of children should bring good preventive results. Education should emphasize specific hazards and their avoidance and should stress the potentially devastating effects of childhood ocular injuries.

We should not ignore the present situation of accidents among children in the rural environment, but open discussion about how to improve it. The high number of accidents causes great social and economic losses and always causes irreversible trauma in the mentality of victims associated with the injury itself, longlasting treatment and frequent disability.

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