

Isolated traumatic optic nerve avulsion in a boy who suffered a horse kick

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Abstract:

We report a case with traumatic avulsion of optic nerve caused by a horse kick in a child that caused loss of vision. Optic nerve avulsion is a rare injury usually associated with maxillofacial structures. Our patient had no light perception in the left eye. The left pupil was dilated and unreactive to light. The left globe was intact. A non-contrast axial computed tomography scan of the orbit demonstrated a widened and altered nerve globe junction with periorbital soft tissue edema. At six month following the injury, subsequent magnetic resonance imaging of the orbit showed that the preseptal soft tissue thickening dispersed spontaneously with total avulsion of the optic nerve and variable severity of surrounding hemorrhage. The patient did not develop phthisis bulbi during three years of follow up. Traumatic optic nerve avulsion presents with a dramatic clinical picture, and can lead to the development of severe visual loss.

Keywords:

Avulsion, horse, injury, ocular, optic nerve, trauma

INTRODUCTION

Optic nerve avulsion is rare form of anterior traumatic optic neuropathy. As visual loss is severe, at-risk settings need to be recognized for public awareness and precautions, particularly for children.^[1] Most reported cases are in young adults in the setting of car accidents, bicycle accidents, falls, and sports injuries.^[1,2] In this case report we describe standing close to and being kicked by a horse as a cause for traumatic optic nerve avulsion in a 10-year-old boy.

CASE REPORT

A 10-year-old boy presented to the emergency department with sudden loss of vision in his left eye after being kicked in the left eye by a horse while standing behind it. During examination he was alert, conscious and oriented. Visual acuity of the right eye was 20/20 and right eye complete ophthalmic examination was normal. Visual acuity of the left eye was no light perception.

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There was periorbital hematoma causing lid swelling and the globe was intact. The pupil was dilated, did not react to light, and showed a relative afferent pupil defect response. The anterior segment was unremarkable apart from subconjunctival hemorrhage temporally. Retinal examination revealed patches of hemorrhage around the optic disc with complete avulsion of optic disc [Figure 1]. A non-contrast axial computed tomography scan of the left orbit [Figure 2] confirmed a widened and altered optic nerve-globe junction. At 6 months following the injury, there was no improvement in vision in the left eye. Follow up magnetic resonance imaging of the left orbit [Figure 2] confirmed persistent disruption in the lamina cribrosa region. Over the next several months the child developed left esotropia. Three years after the injury, the child had 40 prism diopters left esotropia and no signs of phthisis bulbi.

DISCUSSION

In this case report we describe a 10-year-old boy who developed left traumatic optic nerve avulsion after standing close to and being kicked

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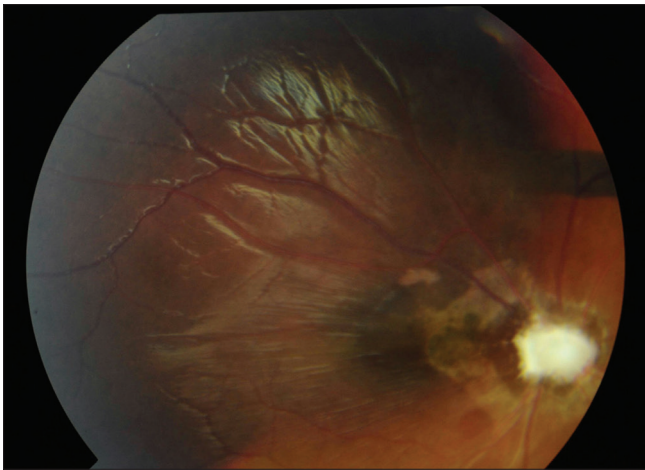


Figure 1: Color fundus photo of the left eye shows patches of hemorrhage at different stages resolution of around the pale avulsed optic disc

by a horse. We are unaware of a previous report of horse-kick-related optic nerve avulsion in a child.

In traumatic optic nerve avulsion, the optic nerve is abruptly disinserted from the retina and choroid by a shear force from sudden globe displacement.^[1] Most reports describe young adults in the setting of motor vehicle accidents, bicycle accidents, falls, and sports injuries.^[1-3] There are at least 3 reports of adults who suffered from traumatic optic nerve avulsion from animal encounters: a horse kick,^[1] a cow kick,^[1] a bear attack,^[4] and a dog bite.^[5]

Although traumatic injuries are a leading cause for pediatric morbidity,^[6] reports of pediatric optic nerve avulsion are rare. One remarkable case series from Saudi Arabia reported 14 children who sustained traumatic optic nerve avulsion after running into horizontal bar-shaped door knobs that were at their eye level.^[7] Prevention (rotation of the door handles upward) was implemented once this risk factor was identified. Other reports of situations in which children sustained traumatic optic nerve avulsion include a 4-year-old boy who fell off his bicycle,^[1] a 10-year-old boy who was hit by a golf club,^[8] a 16-year-old boy who while attempting a power slam dunk during basketball sustained injury from another player's finger,^[9] a 14-year-old boy who was kicked while wearing swimming goggles,^[10] a 14-month-old girl who fell down a staircase,^[11] a 6-year-old girl who hit the handlebars during a bicycle accident,^[11] and a 5-year-old boy who fell down a burrow and hit a brick.^[11]

As traumatic optic nerve avulsion is a devastating injury, prevention is essential. The current case raises awareness that leaving children unattended with horses can be a risk factor. Although most equine-related injuries are minor, a sudden horse kick to a naive child can cause traumatic optic nerve

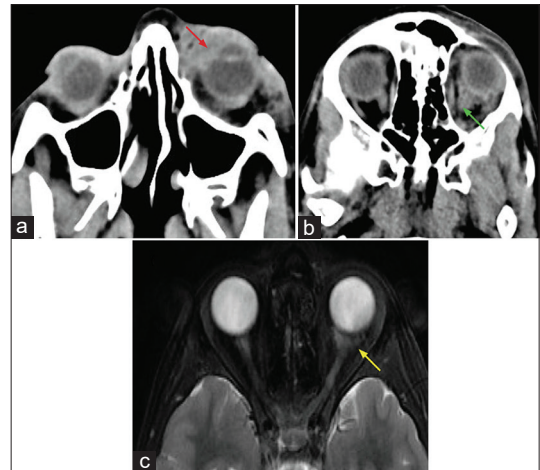


Figure 2: (a) A non-contrast axial computed tomography scan of the left orbit demonstrates widened and altered nerve globe junction with periorbital soft tissue edema. There is also preseptal soft tissue edema (arrow). (b) At 6 months following the injury, the preseptal soft tissue thickening has resolved. Arrow shows the disorganized junction of the optic nerve to the globe. (c) Magnetic resonance imaging of the left orbit more clearly delineates the disorganized junction of the optic nerve to the globe

avulsion. Children should not be left unsupervised in the proximity of horses.

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