Perthes Syndrome by Severe Gravitational Force

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Funding: Supported in part by the Arevalo-Coutinho Foundation for Research in Ophthalmology (FACO), Caracas, Venezuela.
Proprietary/financial interest: None

Abstract

Purpose: To report two patients with petechial hemorrhages in the skin of the face and eyelids and subconjunctival hemorrhages after they were exposed to acute severe gravitational force.

Methods: Two patients developed Perthes syndrome after they were exposed to an unrestrained acute increase of gravitational force in a park attraction. One of them lost his consciousness for few minutes. The mechanism behind this entity is the sudden rise in the cervicofacial venous system pressure.

Results: In our two cases there were no long-term complications encountered and there was spontaneous resolution.

Conclusion: Perthes syndrome independently of the cause can lead to ophthalmic, neurological and even life threatening consequences. Proper clinical examination is warranted upon evaluating a patient with such entity.

Keywords: Perthes syndrome, traumatic asphyxia, subconjunctival hemorrhage.

Introduction

Perthes syndrome or traumatic asphyxia is a condition characterized by subconjunctival hemorrhage, cervicofacial petechiae and cyanosis caused by severe compression of the chest.1–3 This report demonstrates two patients with petechial hemorrhages in the skin of the face and eyelids and subconjunctival hemorrhages after they were exposed to acute gravitational force in a park attraction.

Case Report

We report two male patients with 18 and 20 years old respectively who experienced asphyxia sensation while they were exposed to an unrestrained acute increase of gravitational force in a park attraction for about five minutes. The people in charge of the mechanical attraction detained the machine after they noticed that one of the boys lost his consciousness. The patient recovered consciousness after approximately four minutes, and both boys showed subconjunctival hemorrhage, cervicofacial petechiae, and cyanosis (Figure 1 and 2). One of them came to our clinic two days after the episode.

Discussion

Traumatic asphyxia is an uncommon clinical syndrome characterized by conjunctival cyanosis, rash and petechiae associated with subconjunctival hemorrhage and neurological symptoms.2,3 Other ophthalmic features have been described including retinal hemorrhage, subretinal fluid and papilledema.3 Most of the reported cases were secondary to mechanical compression to the chest; however other non-mechanical etiologies have been reported like sea diving, vomiting and seizure.2 All the above mentioned factors share a common mechanism which is an increase of intra thoracic pressure that lead to high pressure in the cervicofacial venous system.1–4 We report two male patients who developed subconjunctival hemorrhage, cervicofacial petechiae, and cyanosis after they were exposed to an unrestrained acute increase of gravitational force. These hemorrhages most likely have arisen from a sudden increase in intrathoracic pressure due to an intense contraction of the chest and abdominal muscles with the glottis closed as in Valsalva maneuver, in a manner similar to the cervicofacial petechiae and ocular findings associated with high venous pressure that leads to blood stasis and capillary rupture during severe thoracic compression previously reported by Perthes.1 The other proposed mechanism is similar to what has been described in bungee
jumper where there is an increase of blood flow toward the head during the deceleration phase while the cord is maximally stretched. Reversal of the acceleration back will lead to more blood flow and more increase in cervicofacial venous system pressure and even the retinal venous system.6,7 Amgwerd et al reported two bungee jumpers who suffered from symptoms of acute venous stasis in the head which include skin edema, purpura-like bleeding in the face and the conjunctiva, dizziness, confusion and, in one case, transient visual problems.8 In our two cases there were no complications encountered and there was spontaneous resolution.

Traumatic asphyxia has often been described as a rare syndrome with little prognostic significance. However prolonged thoracic compression could lead to cerebral anoxia and neurological sequelae.9 Hiermer et al recommended intensive supervision of the patients with severe blunt thoracic trauma because six of their seven cases developed delayed appearance of cardiac and pulmonary symptoms.10 In the Sperry et al series, all cases secondary to deceleration injury or compression of the anterior thorax were associated with pulmonary injury, and it is reported that thoracic compression can cause death within minutes.11,12

In summary, Perthes syndrome with traumatic asphyxia independently of the cause (directly mechanical compression or gravitational) can lead to ophthalmic, neurological and even life threatening consequences. Proper emergency exam including ophthalmic evaluation with supportive treatment is warranted.

References