Eye Injuries in Athletes

Background

1. General information:
   - Over 100,000 sports-related eye injuries occur each year
     - More than 42,000 seen in Emergency Rooms
   - One third of sports related eye injuries involve children
     - Most eye injuries among children ages 11-14 occur while playing sports
     - 4-50% of these injuries result in legal blindness
     - May occur even without anatomic loss of eye
       - Corneal or retinal injuries can result in visual acuities of less than 20/200
   - Sports associated with highest number of eye injuries: basketball, baseball, and softball
     - Higher rate of blinding injury seen in hockey and rugby
     - Baseball is leading cause of sports related eye injury in children under 14
     - Sport with the highest number of sports related eye injury among 15-24 year olds is basketball
   - Boys ages 11-15 are five times as likely to sustain eye injuries requiring hospital treatment than girls
   - Other high-risk sports: boxing, soccer, swimming, martial arts, and racquet sports
   - Moderate risk: badminton, football, golf, handball, lacrosse, tennis and wrestling
   - Low risk: cycling, cross-country, and track and field
   - Sports-related eye injuries represent significant eye health hazard worldwide
     - US sports-related eye injuries account for more than 100,000 physician visits per year and cost more than $175 million
   - Nearly all sports-related eye injuries are preventable,
     - Prevention of traumatic sports-related eye injuries is cost-effective
     - Hockey face protectors have saves approximately $10 million a year
   - All eye injuries should be considered serious
   - Signs of injury requiring immediate attention include:
     - Sudden decrease or loss of vision
     - Loss of field of vision
     - Pain with movement of the eye
     - Photophobia
     - Diplopia
     - "Lightning flashes" or new floaters
     - Irregular pupil
     - Foreign body sensation
     - "Red eye"
     - Blood in the anterior chamber
     - Halos around lights (corneal edema)
- Protrusion of one eye
  - Sideline injury evaluation
    - History
    - Examination
      - Mechanism of injury, degree of disability
      - Inspection for deformity, rupture, foreign body
      - Inspection of the anterior segment (cornea, anterior chamber, pupil)
      - Inversion of the eyelid to evaluate for foreign body
      - Ocular motility assessment (EOM)
      - Fundoscopic examination – floaters, lens, retina
      - Visual fields-by confrontation
      - Visual acuity-using pocket card
      - Palpation-facial bone injury
      - Inspection with fluorescein-for corneal abrasion
  - Essentials of an Emergency Kit for eye injuries
    - Eye shield, tape, commercial eye wash, penlight, near vision card
    - Fluorescein strips, topical anesthesia, lid retractor, topical meds
  - Eye Protection
    - Governing bodies often set standards for protection for sport
    - Eye protection use may be optional
    - Polycarbonate lenses with 3-mm center thickness are generally recommended
    - Sturdy frames with posterior rims and molded temples offer best protection
    - Prescription and anti-fog lens treatments are available
    - Customized eyewear should be fitted by an experienced optician, optometrist, or ophthalmologist
    - Sports-related eye injuries are quite common
      - Number of athletes who use protective eyewear is extremely low
    - Family physicians, ophthalmologists, optometrists, and others play a critical role in providing patients with information about preventive measures
    - Primary care physicians can help prevent eye injuries by recommending use of eye protectors with polycarbonate plastic lenses for most athletes, regardless of whether they have normal vision or they wear glasses or contact lenses
    - Medical and eye care professionals have a responsibility to advise patients of potential eye injuries in sports and available methods of protection against injury
    - Ninety percent of sports-related eye injuries may be prevented with protective eyewear
      - Prevention is the best and most effective treatment
      - Surgery is an option in extreme cases; it can be avoided by taking the necessary steps to protect sight
      - Recommend regular eye exams
      - Children should have proper sport-specific eyewear
- The American Society for Testing and Materials has established protective eyewear requirements for each sport
  - Standards available on American Optometric Association Website at http://www.aoa.org/x7679.xml
- Many youth and children's team don't require eye protection
  - Parents must insist that their children wear safety glasses or goggles whenever they play
  - Parents should set a good example by wearing protection themselves
  - Recommend protective eyewear for all children, not just those with glasses or contacts
- Protective eyewear includes safety glasses and goggles, safety shields, and eye guards specially designed to provide correct protection for a certain activity
- Ordinary prescription glasses, contact lenses, and sunglasses do not provide adequate protection in eye-hazardous situations
  - Safety goggles should be worn over them
- Polycarbonate lenses provide best eye protection for many sports
  - These lenses are lightweight, scratch-resistant, thin, and can be designed to meet most eyewear designs or prescriptions
  - Polycarbonate is ten times more impact-resistant that other materials

Topics
1. Hyphema
2. Lacerations
3. Corneal abrasions
4. Subconjunctival hemorrhage
5. One-eyed athletes

References

Authors: Clark Cobb, MD, & Chad Hulsopple, DO, Martin Army FMR, Ft. Benning, GA

Editor: Carol Scott, MD, University of Nevada Reno FPRP