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This article is a review of the anatomy of the eye and its surrounding tissues. A working knowledge of the functional anatomy of the eye will aid the emergency physician in performing a thorough yet efficient physical examination of the eye. A goal-directed physical examination of the eye will allow the emergency physician to attempt to identify (or exclude) vision-threatening disease processes and facilitate communication with the ophthalmologist.

Ophthalmologic emergencies account for up to 3% of visits to emergency departments in the United States. Although isolated ocular complaints are rarely life-threatening, they can lead to significant short- and long-term morbidity, including permanent visual loss. The role of the emergency physician in management of ocular emergencies is similar to that for other chief complaints: to recognize and diagnose emergency conditions, to provide appropriate initial therapy, and to ensure correct disposition. This article reviews several of the essential ophthalmologic procedures that are within the scope of emergency medical practice. Slit lamp

examination, foreign body removal, use of ultrasound, tonometry, and other emergency ophthalmologic procedures are discussed.

Diagnosis and Management of the Acute Red Eye

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Ahmed R. Mahmood and Aneesh T. Narang

The red eye is one of the most frequent presenting complaints in the emergency department setting. A wide spectrum of disease processes may present as a red eye, ranging from benign self-limiting etiologies to serious vision-threatening ones. The emergency physician must be adept at recognizing “red flags” from the history and physical examination that necessitate immediate treatment and referral. In addition, it is imperative for the emergency physician to recognize the need for immediate versus elective ophthalmologist consultation for the various conditions. This article includes a discussion of the key historical features, clinical presentations, physical examination findings, and management of the more common causes of the red eye.

Ocular Infection and Inflammation

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Jorma B. Mueller and Christopher M. McStay

Managing the inflamed or infected eye in the emergency setting presents a diagnostic and therapeutic challenge to the emergency physician; the causes and prognoses range from benign, self-limited illness to organ-threatening pathology. A careful history, with attention to comorbid illnesses and time course, is paramount, as is knowledge of the complete ophthalmologic examination. Much of the organ morbidity is ameliorated with prompt therapy in the emergency department and by initiating ophthalmologic consultation. In this article, the authors discuss the diagnosis and treatment of several types of eye infection, including conjunctivitis, episcleritis, keratitis, uveitis, hordeolum and chalazion, dacryocystitis, and cellulitis.

Acute Monocular Visual Loss

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Michael Vortmann and Jeffrey I. Schneider

Acute monocular visual loss is an alarming symptom for the patient and the emergency physician. This article focuses on the presentation, diagnosis, and management of several causes of acute monocular visual loss with suggestions for when to emergently involve an ophthalmologist. Topics discussed include temporal arteritis, optic neuritis, retinal artery occlusion, retinal vein occlusion, retinal detachment, and retinal vasculitis.

Trauma to the Globe and Orbit

97

Sharon P. Bord and Judith Linden

Trauma to the eye represents approximately 3% of all emergency department visits in the United States. Rapid assessment and

examination following trauma to the eye is crucial. A thorough knowledge of potential injuries is imperative to ensure rapid diagnosis, to prevent further damage to the eye, and to preserve visual capacity. This article describes the aspects of the eye examination that merit special attention in the case of trauma. It then discusses the eye injuries most likely to be seen in the emergency department and their appropriate treatment.

Chemical, Thermal, and Biological Ocular Exposures

125

Jordan Spector and William G. Fernandez

Chemical or radiant energy injuries to the eyes are considered ocular burns. The majority of these injuries are occupation-related. Chemical burns are by far more common and represent a true emergency. Thermal and UV injuries are associated with severe pain, but often result in less long-term sequelae than chemical injuries do. The term “biologic exposure” refers to an exposure to human blood or other body fluid. This article describes patterns of these injuries and exposures, with particular emphasis on emergent management and including acute diagnostic and treatment considerations.

Neuro-Ophthalmology

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David K. Duong, Megan M. Leo, and Elizabeth L. Mitchell

Neuro-ophthalmologic disorders arise from all areas of the neuro-ophthalmologic tract. They may be expressed simply as loss of vision or double vision, or as complex syndromes or systemic illnesses, depending on the location and type of lesion. Problems may occur anywhere along the visual pathway, including the brainstem, cavernous sinus, subarachnoid space, and orbital apex, and may affect adjacent structures also. A firm understanding of the neuroanatomy and neurophysiology of the eye is essential to correct diagnosis.

Pediatric Ophthalmology in the Emergency Department

181

Kimball A. Prentiss and David H. Dorfman

Examining the young child who presents to the emergency department with a visual or ocular complaint can be a challenge. This article discusses basic concepts of visual and behavioral development and methods for an accurate ocular examination in young children. Topics reviewed include conjunctivitis, orbital and periorbital cellulitis, lacrimal system infections, congenital issues, misalignment, and oncology.

The Painful Eye

199

James M. Dargin and Robert A. Lowenstein

Emergency physicians are required to diagnose and treat patients who have a painful eye on a regular basis. This article focuses on ophthalmologic emergencies that range in presentation from mild to severe symptomatology and include vision and eye-threatening ailments. The etiology, pathophysiology, physical examination, and treatment of the following conditions are discussed: acute angle closure glaucoma, scleritis, anterior uveitis, optic neuritis, keratitis, and corneal abrasion. This article should provide the necessary information to allow for rapid diagnosis and initiation of appropriate treatment of the painful eye.

Ophthalmologic Complications of Systemic Disease

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Jean E. Klig

The human eye, as an organ, can offer critical clues to the presence of systemic disease. This article discusses the various ophthalmologic manifestations of systemic disease that can be evident on examination by an emergency department provider, as well as some findings that can be discerned with specialty consultation. The following topics are reviewed with respect to potential ocular signs and complications: syphilis, herpes zoster, Lyme disease, acquired immunodeficiency syndrome, Reiter's syndrome, Kawasaki's disease, temporal arteritis, endocarditis, hypertension, and diabetes mellitus. Indications for emergent ophthalmologic consultation are also emphasized.

Conditions Requiring Emergency Ophthalmologic Consultation

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Brendan Magauran

Emergency physicians are well prepared to diagnose and manage the majority of visits requiring emergency ophthalmology consultation. However, deciding which cases require the expertise of an ophthalmologist and in what time frame can be a challenge. This article attempts to provide guidelines to the emergency physician regarding when to call for emergency ophthalmology consultation.

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