The normal flora of the head and neck exists in a delicate balance within tightly regulated ecologic niches, counterbalanced by a highly efficient innate immune system of the host. Invasion by the normal oral flora is rare when mucosal defenses remain intact. An understanding of the indigenous microflora and the innate mucosal defense mechanisms is necessary for an appropriate evaluation of infections and therapies in this area.

A variety of methods, including direct examination of stained smears, antigen detection, routine and special cultures, and histopathologic evaluation are available for investigation of head and neck infections. Newer rapid molecular techniques with increased sensitivity and specificity are becoming available at many centers. Evaluation of specific causes in head and neck infections is complicated by the tendency for polymicrobial infections, difficulty in obtaining adequate specimens, and the presence of a diverse endogenous microflora at various mucosal sites that also can include true pathogens. These aspects of laboratory investigation for head and neck infections are reviewed in this article.

Imaging the head and neck presents a unique challenge because of the dense concentration of complex anatomy and the importance of
lesion localization in formulating the differential diagnosis and prognosis. Critical imaging features such as the ability to define fascial borders of soft tissue neck compartments, the demonstration of intricate anatomy such as the temporal bones and paranasal sinuses, and the noninvasive assessment of vascular integrity have improved greatly in recent years in parallel with the rapid technologic advances in multidetector CT and MRI. After comparing the available imaging techniques, this article explores the imaging findings by anatomic region.

Microbiology and Principles of Antimicrobial Therapy for Head and Neck Infections
Itzhak Brook

The principles of antimicrobial management for head and neck infections include establishing an accurate clinical and microbiologic diagnosis and treating the patient initially with an empiric antimicrobial regimen based on predicted likelihood of success and reduced potential for resistance. Subsequent adjustments may be required based on clinical response and available culture results. This article summarizes the aerobic and anaerobic microbiology of selected acute and chronic infections of the head and neck and the approaches to antimicrobial therapy.

Periorbital and Orbital Infections
Ellen R. Wald

Practitioners frequently have the opportunity to manage the child for whom the chief complaint is a swollen eye. Some children have trivial or self-limited disorders, but others can have sight- or life-threatening problems. Noninfectious causes of the swollen eye include blunt trauma, tumor, local edema, and allergy. Infectious causes can be preseptal or orbital in origin. The differential diagnosis and management of these conditions are considered in this article.

Diagnosis and Treatment of Acute Otitis Media: Evaluating the Evidence
John H. Powers

Acute otitis media (AOM) is one of the most common illnesses for which children in the United States receive an antimicrobial agent. Of the six recommendations offered in recent guidelines for treatment of AOM, only one, the assessment and treatment of pain with analgesics, is based on strong evidence. This article reviews the diagnosis of AOM and the accuracy of various signs and symptoms in indicating a bacterial origin, the data on the effect of antimicrobial agents compared with placebo in the treatment of AOM, and the gaps in knowledge that should be addressed by future research and clinical trials.
Sinusitis is one of the most common complaints resulting in physician visits in the United States. An antecedent viral infection of the upper respiratory tract is the most common presentation. Despite its prevalence, most cases resolve spontaneously. Only a small proportion develops a secondary bacterial infection that will benefit from antimicrobial therapy. This article discusses the microbiology and pathogenesis of acute and chronic bacterial sinusitis. The role anaerobic bacterial in chronic and recurrent sinusitis is emphasized, and appropriate antimicrobial regimens are discussed.

Acute pharyngitis is one of the most common illnesses for which patients visit primary care physicians. Most cases are of viral origin, and with few exceptions these illnesses are both benign and self-limited. The most important bacterial cause is the beta-hemolytic group A streptococcus. There are other uncommon or rare types of pharyngitis. For some of these treatment is required or available, and some may be life threatening. Among those discussed in this article are diphtheria, gonorrhea, HIV infection, peritonsillar abscess, and epiglottitis.

Both dental decay and periodontal disease are diagnosable and treatable bacterial infections. They are distinctly different infections, with dental decay occurring on the supragingival surfaces of the teeth and periodontal infections occurring in the gingival tissue approximating the subgingival plaque. The bacteria involved and the pathophysiology of these infections are distinctly different.

Oral mucositis is a serious complication of cancer therapy and in severely immunosuppressed patients. In immunosuppressed patients, the signs and symptoms of infection often are muted because of limited host response, and accurate diagnosis and appropriate treatment may be difficult. Prevention of mucosal breakdown, suppression of microbial colonization, control of viral reactivation, and effective management of severe xerostomia are all critical steps to reducing the overall morbidity and mortality of oromucosal infections.
Cervical Lymphadenitis, Suppurative Parotitis, Thyroiditis, and Infected Cysts
Nawaf Al-Dajani and Susan H. Wootton

Neck masses are common and have a variety of infectious agents and noninfectious causes. This article reviews the more common infectious causes of neck masses—cervical lymphadenitis, suppurative parotitis, thyroiditis, and infected cysts. Important clinical pearls, diagnostic evaluation including laboratory studies, and imaging are summarized. Methods for prevention are highlighted.

Cervicofacial Actinomycosis and Mandibular Osteomyelitis
Abdu A. Sharkawy

Cervicofacial actinomycosis should be included in the differential diagnosis of any soft tissue swelling in the head and neck region, particularly if malignancy or a granulomatous disease is suspected. The diagnosis often is overlooked because of this entity’s ability to mimic other conditions. Mandibular osteomyelitis also is underappreciated by many clinicians in their assessment of head and neck infections. Most cases are traced to an odontogenic source, with periapical tooth abscess and posttraumatic or surgical complication as key antecedent events.

Life-Threatening Infections of the Peripharyngeal and Deep Fascial Spaces of the Head and Neck
Steven C. Reynolds and Anthony W. Chow

This article reviews life-threatening infections of the head and neck. It discusses the anatomic boundaries, pathophysiologic processes, clinical manifestations, potential complications, and suggested therapies of infections of the submandibular, lateral pharyngeal, retropharyngeal, prevertebral, and danger spaces.

Vascular and Parameningeal Infections of the Head and Neck
Kevin B. Laupland

Vascular and parameningeal infections of the head and neck are rare but frequently life threatening. These infections include intracranial and extracranial septic venous thrombophlebitis, arterial mycotic aneurysms and erosions, subdural empyema, and epidural abscesses. They usually arise as complications of otogenic, oropharyngeal, or paranasal sinus infections, and management involves an aggressive combined medical-surgical approach.

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