Oral Infections and Antibiotic Therapy

Marilyn E. Levi, MD[a,*], Vincent D. Eusterman, MD, DDS[b]

KEYWORDS

• Oral infection • Odontogenic infection • Antibiotics
• Neck infection

Oral infections commonly originate from an odontogenic source in adults and from tonsil and lymphatic sources in children. Bacterial contamination of adjacent sterile tissue with normal oral flora result in infections the microbiology of which is usually predictable, and together with implementation of appropriate antibiotic options, can lead to successful treatment. Odontogenic infections arise as a result of advanced dental caries or from periodontal disease. Dental disease produces pulpitis, which may progress to periapical abscesses and can spread through bone, soft tissue, and into deeper structures. Periodontal infections from gingivitis, periodontitis, or periodontal abscess may be severe and also spread to deeper structures. Serious oral infections that go untreated may spread superiorly to the orbits and brain, to the retropharyngeal space or pleural space resulting in an empyema. Hematogenous spread may result in endocarditis, seeding of prosthetic material and other metastatic foci. Oral trauma, radiation injury, chemotherapy mucositis, salivary gland infection, lymph node abscess, and postoperative infection are potential nonodontogenic sources of infections that could potentially be life threatening. This article reviews the serious nature and potential danger that exists from oral infection and the antibiotics available to treat them. Successful treatment requires an understanding of the microflora, the regional anatomy, the disease process, the treatment methods available, and interdisciplinary team collaboration.

ANATOMY

Oral infections spread in a pathway of least resistance often into the oral cavity or into the deep spaces of the neck, which may become life threatening. Deep-space infections originate most commonly from odontogenic sources in adults and from tonsil

Financial disclosure: the authors have nothing to disclose.
[a] Department of Medicine, Division of Infectious Diseases, University of Colorado Denver, 1635 Aurora Court, Mail Stop B-163, Aurora, CO 80045, USA
[b] Department of Otolaryngology-Head and Neck Surgery, University of Colorado School of Medicine, Denver Health Medical Center, 777 Bannock, Denver, CO 80204, USA
* Corresponding author. University of Colorado Denver, 1635 Aurora Court, Mail Stop B-163, Aurora, CO 80045.
E-mail address: Marilyn.Levi@ucdenver.edu

Otolaryngol Clin N Am 44 (2011) 57–78
doi:10.1016/j.otc.2010.10.003 **oto.theclinics.com**
0030-6665/11/$ – see front matter

and other lymphatic sources in children. Spaces in the neck are created between the superficial, middle and deep layers of the deep cervical fascia. These spaces are interconnected (**Fig. 1**). Three posterior pharyngeal spaces, the retropharyngeal space (RPS), the danger space (DS), and the prevertebral space (PVS), and a lateral pharyngeal space, the visceral vascular space (VVS), extend from the skull base to the mediastinum and beyond. The RPS extends to the upper mediastinum and contains the nodes of Rouviere, which involute by age 6 years; the RPS can rupture posteriorly into the DS. The DS extends to the inferior mediastinum; it lies just behind the RPS, between the alar anteriorly and the prevertebral fascia posteriorly. The PVS lies behind the DS and may extend to the coccyx as it has the vertebral body as the posterior wall and prevertebral fascia as the anterior boundary. Laterally, the VVS, which contains all 3 layers of the deep cervical fascia, extends from the skull base behind the parapharyngeal space to the mediastinum. The VVS contains the carotid artery, jugular vein, and vagus nerve. Smaller lateral suprahyoid spaces (temporal, masticator, submandibular, peritonsillar, and parotid) empty into the parapharyngeal space (PPS), which has access to mediastinum by way of the the RPS and VVS. The PPS is also known as the pharyngomaxillary space or lateral pharyngeal space. The PPS is divided into anterior and posterior portions. The anterior component contains parapharyngeal fat and the tonsillar fossa. It has no boundaries and may access other spaces; infections here are considered surgical emergencies.[1] The posterior component of the PPS is

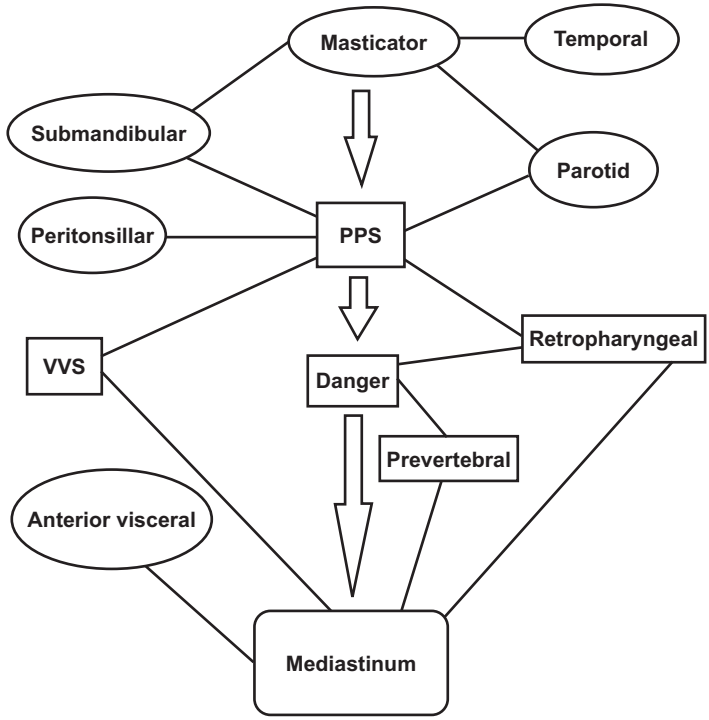

Fig. 1. Deep neck-space communications identify the parapharyngeal space (PPS) as a major communication link for odontogenic infections to reach the mediastinum by way of the retropharyngeal (RPS), danger (DS), prevertebral (PVS), and the visceral vascular (VVS) spaces.