F15 Oral Infections That Kill

Peter W. Loomis, DDS, and Homer R. Campbell, DDS, Office of the Medical Investigator, Department of Pathology, University of New Mexico School of Medicine, Albuquerque, NM 87131*

The educational goals of this presentation are to impress upon the healthcare and forensic communities that common oral infections can become lethal.

Dental and orofacial infections have the potential of becoming life threatening if left unchecked. Healthcare providers need to recognize and treat such infections before sepsis and multi-organ involvement ensue.

The educational goals of this presentation are to impress upon the healthcare and forensic communities that common oral infections can become lethal. Cervical necrotizing fasciitis (CNF), clinical sepsis, brain abscess, endocarditis and broncho-alveolar pneumonia originating from dental-alveolar infection can lead to a rapid demise. This presentation will include the clinicopathologic features of CNF, its anatomical progression from an oral focal point, the microbiology involved, and introduce three unreported cases of death due to oral infection.

Over the past 20 years the New Mexico Office of the Medical Investigator has investigated eight deaths attributable to CNF with a dental origin. Three of these cases were encountered during the past year (2002) and one will be reported in this presentation along with two other cases of death resulting from an oral infection. Over 80 cases of CNF have been reported in the English language literature and of those, up to 80% had an odontogenic focal point of infection.

CNF can be a rare sequelae of dental infection, becoming a severe, rapidly progressing bacterial infection of the subcutaneous soft tissue of the neck, often with hematogenous spread to distant organs. CNF causes extensive necrosis of the superficial and deep fascia, subcutaneous fat and muscle, rapidly dissecting the fascial planes potentially extending into the mediastinum, pericardium and thorax. Without early recognition, aggressive antibiotic therapy, surgical debridement and or hyperbaric oxygen therapy, the course of the infection is rapid with a significant mortality rate. It can start from a breach of the oral/pharyngeal mucous membrane, a periapical tooth abscess, periodontal disease or external trauma. The bacteria from the site invade the deeper tissue and blood vessels if it is not contained by the immune system. The spread of these bacteria, especially *E. coli* and *Streptococcus sp.*, is very rapid. Bacteria initiate a local immune response in the area of the wound that can lead to a general feeling of malaise. When the bacteria enter the blood stream, a more vigorous immune response is elicited and the infection can spread to all the organs in the body. Septic shock ensues as the infection overwhelms the defenses and causes the organs to fail. In the following case report, the malaise this decedent felt during the few days before his death was probably due to the early and then worsening infection. By the time he collapsed, he was already in septic shock.

A 66-year-old Caucasian male died from complications of cervical necrotizing fasciitis caused by oral infection eight days after extraction of his mandibular teeth. One day following the removal of the sutures placed at the time of surgery, the decedent had feelings of general malaise, stomach ache, and headache, as well as several small nosebleeds that neither he nor his wife could control. She convinced him to see a physician, however he collapsed before they left the house and Emergency Medical Services could not resuscitate him. Other than hypertension (for which he did not take medication), his medical history was unremarkable. Autopsy revealed that the bacterial infection had spread to his kidneys, brain and lungs. *E. coli* was cultured from the lungs, leptomeninges, blood, soft tissue of the neck and *alpha streptococcus* was also cultured from the lungs. Atherosclerosis of the coronary arteries, the aorta and pulmonary artery was observed, as well as dilated cardiomyopathy. Crepitus of the soft tissues of the neck was evidence of gas production from the bacteria that had invaded the soft tissues of the neck, traversing the fascial planes. His history of chronic periodontal disease, coupled the recent extractions, suggests that the sepsis was a direct result of the oral infection and oral surgery performed.

Additionally, two cases of death from clinical sepsis with acute broncho-alveolar pneumonia having an oral focal point of infection will be presented. In one case the patient died from multi-organ failure due to sepsis from bilateral pneumonia with abscess formation caused by *Fusobacterium varium* (a gram negative anaerobe). The infection was initiated from aspiration of oral/upper airway contents associated with a large periodontal abscess on the distal aspect of the lower left second molar tooth. A second patient died from clinical sepsis and organ failure due to cellulitis, broncho-alveolar pneumonia and soft tissue abscess on his right flank. *Eikenella corrodens* (a facultative gram negative bacillus) was cultured from the extensive soft tissue abscess. The source of the infection was a severe periodontal infection that spread to the upper airway and via hematogenous pathways to the other sites involved.

Dental Infection, Sepsis, Cervical Necrotizing Fasciitis

 ** Presenting Author*