Bezold’s Abscess in the Setting of Radiation Induced Mastoiditis

Christopher A. Mascarinas MD, Michael C. Singer MD, Matthew B. Hanson, MD
SUNY Downstate Medical Center, 450 Clarkson Avenue, Brooklyn, NY 11203. Phone: 718-270-1638

Introduction

Osteoradionecrosis (ORN) is a serious complication of radiation therapy, which was first described by Ewing in 1926. While ORN of the mandible has been commonly reported, any radiated bone has the potential to be affected. While ORN of the temporal bone is a relatively rare and indolent disorder, it can have devastating sequelae. It typically presents with chronic otomastoiditis. This is to the best of our knowledge, the first reported incidence of a Bezold’s abscess resulting from temporal bone ORN.

Case Report

A 77 year old female with a history of a T2N0M0, stage II soft palate squamous cell carcinoma was treated with partial palatectomy and right supraomohyoid neck dissection in 1990. In 2003, she developed a second primary tumor of the soft palate. This T4bN2M0, stage IVb squamous cell carcinoma was treated with concurrent chemoradiation therapy. She received a total of 7000cGy of external beam radiation and had a complete clinical response. In 2008, she developed osteoradionecrosis of the mandible which was treated with hyperbaric oxygen therapy. She had no prior history of any ear complaints.

In January 2009, the patient presented to the emergency room complaining of severe left otalgia and jaw and neck pain associated with left hearing loss. This was accompanied by swelling of the left face and neck and fever. Physical examination showed extensive erythema and induration of the left face, auricle and post-auricular area. The area of the mastoid tip and superior sternocleidomastoid muscle (SCM) was exquisitely tender. There was no palpable fluctuance on exam. Otoscopy revealed severe left external ear canal edema, obstructing the view of the tympanic membrane. The facial nerve was intact. Fibroptic nasopharyngoscopy showed extensive crusting in the nasopharynx with edema involving the left torus tubarius.

Computer tomography showed left-sided, coalescent mastoiditis and an abscess within the superior aspect of the SCM muscle communicating with the mastoid cavity through a bony dehiscence of the mastoid tip, consistent with a Bezold’s abscess. (Figures 1 and 2)

The patient was started on broad spectrum intravenous antibiotics and pain medications on presentation. Under general anesthesia, she underwent incision and drainage of the abscess. The wound was irrigated and packed with iodoform packing. Cultures grew streptococcus viridans. The swelling, erythema and pain resolved over one week and the patient was discharged on oral antibiotics. A persistent postauricular fistula at the incision site closed with prolonged wound care.

Discussion

Otolaryngologists are frequently confronted with ORN of the mandible, a well known complication of radiation to the head and neck. ORN of the temporal bone is much less common. It most commonly occurs in patients treated for nasopharyngeal carcinoma, but has been reported after radiation therapy for malignancies of the oropharynx, parotid glands and paranasal sinuses.

Although first described in 1926, the pathophysiology of ORN is still being fully characterized. Radiation is thought to cause endarteritis of the periosteum and aseptic avascular necrosis of bone, making it susceptible to trauma and infection.

Colonization of necrotic bone with bacteriologic biofilms is thought to be a contributing factor to the chronicity of the symptoms.

The presentation of ORN of the temporal bone may occur many years after the initial radiation insult. One study reported an average latency period of 8.4 years between treatment and symptom development. Clinical presentations of ORN of the temporal bone are varied and include recurrent or chronic otitis media, labyrinthitis, sensorineural hearing loss, vestibulopathy, persistent tympanic membrane perforation and external ear canal stenosis. However, patients most commonly present with otalgia, otorrhea and hearing loss. Middle ear effusions (referred to as radiation otitis media), chronic purulent otorrhea, exposed bone in the external ear canal and skin breakdown over the mastoid are frequent physical findings. These patients can have conductive, sensorineural or mixed hearing loss.

Complications of temporal bone ORN can be severe. Reported problems include chronic otomastoiditis, cerebrospinal fluid leak, otitic meningitis and facial nerve paralysis. This is the first reported case of a Bezold’s abscess complicating temporal bone ORN. Bezold’s abscess, first described by Friedrich Von Bezold in 1881 is a neck abscess in the SCM muscle. Awareness of the possible sequelae and varied presentations of ORN of the temporal bone is important when caring for patients receiving radiation to the head and neck. Knowledge of temporal bone ORN will facilitate its early diagnosis and proper treatment to potentially serious complications.

References

1. Ewing J. Radiation osteitis. Acta Radiol 1929, 6:399-412