H62 The Differential Diagnosis of Skullbase Osteomyelitis Secondary to Necrotizing Otitis Externa

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After attending this presentation, attendees will understand the importance of microscopic examination in the diagnosis of pathological conditions and the necessity of cooperative efforts in the resolution of cold cases.

This presentation will impact the forensic community and/or humanity by calling attention to the occurrence of skullbase osteomyelitis secondary to necrotizing otitis externa and illuminating the potential usefulness of a differential diagnosis in the evaluation of pathological conditions.

A case study in which the skeletal remains of a man recovered in 1963 were recently identified through the cooperative efforts of forensic specialists will be presented. Initially described as a woman in 1963, the remains were stored as evidence at the Fort Worth Police Department for 40 years. In 2004, the remains were turned over to the Tarrant County Medical Examiner's Anthropology Laboratory for reevaluation. Metric and non-metric evaluation indicated that the remains were those of a white male, age 33-45 years. A facial reconstruction was produced and recognized in a local newspaper by friends of the decedent. Identification was confirmed through mitochondrial DNA comparison with a maternal first cousin. No antemortem medical records were located. The decedent's military records had been destroyed in a fire in 1973.

Differential diagnosis began with gross and radiological evaluation of the skull. Multiple osteolytic lesions affecting the endocranial lamina and diploë of the cranium were noted. The lesions bilaterally affected the petrous bones, the sphenoid, and the frontal bone at the terminations of the middle meningeal arteries. Two lesions were removed from the cranium and retained for microscopic analysis before the remains were released to the family.

The lytic samples were embedded in epoxy resin and thin ground sections were prepared for microscopic examination. Microscopic examination revealed the presence of abnormal bone resorption due to osteoclastic hyperactivity and reactive new bone growth at the lytic foci. This resorptive and formative bone behavior is a diagnostic characteristic of skullbase osteomyelitis.

Skullbase osteomyelitis (SBO) secondary to necrotizing otitis externa, first described by Meltzer and Kelemen in 1959, is an inflammatory pyogenic infection affecting the temporal and sphenoid bones. It is an uncommon complication that arises from chronic ear infections. The infection begins in the soft tissues within the external auditory canal and extends into the retromandibular fossa through the Santorini fissure. The infection continues its extension into the parotid space and throughout the petrous apex and sphenoid. Pus is produced within the bone, causing abscesses. These abscesses deprive the bone of its blood supply, causing necrosis of the bone tissue. If left untreated, the progressive infection will continue its extension posteriorly and medially, resulting in cranial nerve palsy, sigmoid sinus thrombosis, intracranial extension, and death (Schultz, 2001). If prompt and aggressive antibiotic treatment is administered, the infection may be arrested. This particular individual shows progressive skullbase osteomyelitis, an anticipated finding in a case associated with the pre-antibiotic era.

This poster presents the differential diagnosis of skullbase osteomyelitis secondary to necrotizing otitis externa. Anecdotal information obtained from the family members supports this hypothesis as this individual suffered from chronic ear pain.

Osteomyelitis, Necrotizing Otitis Externa, Differential Diagnosis

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