Radiographic Findings of Synovial Chondromatosis of the Temporomandibular Joint: Case Series in One Institution

1Aron Z Pollack, MD, 2Mari Hagiwara, MD and 1David Myssiorek, MD, 1Department of Otolaryngology–Head and Neck Surgery and 2Department of Radiology, New York University Medical Center

INTRODUCTION

Synovial chondromatosis (SC) of the temporomandibular joint (TMJ) is a rare monarticular arthropathy of unknown etiology caused by metaplastic change of the synovium, resulting in the formation of multiple hyaline cartilage nodules in a joint, tendon sheath or bursa. These nodules can detach from the synovial membrane as they grow in size and become free fragments within the joint space. Secondary calcification/ossification can occur at the various stages of the disease. Although SC of the TMJ usually involves the superior compartment and is confined to the synovial cavity, extension to the periartricular area, such as the glenoid fossa, zygomatic arch, middle ear, parotid gland, skull base and middle cranial fossa have been reported. Given the potential for extracapsular growth and intracranial extension, early and accurate diagnosis is imperative.

Symptoms are nonspecific and commonly include preauricular pain, swelling, restricted movement of the mandible and joint crepitation. Less frequently, articular noises and temporary malocclusion, such as posterior open bite or mandibular midline shift is seen. Due to the rarity of disease, atypical presentation, and lack of awareness of the clinical condition, many months or even years often pass before the diagnosis is confirmed. Furthermore, SC may clinically mimic symptoms of many common TMJ or parotid diseases, further highlighting the role of radiographic imaging in diagnosis. High-resolution computed tomography (CT) imaging containing soft tissue density in both axial and coronal slices and magnetic resonance imaging (MRI) are helpful diagnostic tools. Herein we report the distinctive radiologic findings of three cases of SC of the TMJ over the past five years. In each case, radiographic imaging was obtained in the setting of acute trauma or altered mental status; the finding of SC was serendipitous, highlighting the progressive developmental stages of this rare clinical entity.

CASE SERIES

Retrospective chart review of all patients seen within our institution from 2005-2010 yielded a total of 3 patients with radiographic evidence of SC of the TMJ.

Case 1: 49 year old undiagnosed female brought in by ambulance after sustaining a fall. The patient had a history of multiple facial traumas. CT showed increased right preauricular soft tissue and faintly ossified structures in the left TMJ, the largest measuring 1.4 cm in craniocaudal dimension (figure 1). The patient was without related symptoms.

Case 2: 64 year old male who presented to the ER after sustaining a fall during a hypoglycemic episode. CT had incidentally shown a well circumscribed expansile area of prolific cartilaginous/ossific mineralization in the region of the right TMJ. The TMJ capsule was markedly expanded. MRI (figure 2) demonstrated numerous areas of low signal intensity surrounding the right mandibular condylar head. On dynamic sequence, there was significant limited range of motion of the condyle with limited anterior translation. Physical exam was significant for 2x2cm bony hard mass at the level of the TMJ. As this patient had hypothyroidism, decision was made to observe for progression.

Case 3: 37 year old male brought into the psychiatric ER for acutely altered mentation and assaultive behavior after laying down on the street in the middle of traffic. CT showed multiple calcified bodies surrounding the right TMJ with joint space widening (figure 3).

DISCUSSION

The pathogenesis of SC is not fully understood, but is thought to represent a stromal metaplasia of synovium to cartilage which often calcifies. Milgram classified these changes into three progressive phases. The early phase involves metaplastic chondrogenesis within the synovial membrane alone; the transitional phase includes the presence of loose bodies with metaplasia in the synovial membrane and detached calcified nodules; advanced SC is characterized by multiple loose bodies with detached particles and no sign of intrasynovial disease.

Noyek at al. described 5 radiographic features: a widened joint space, limitation of motion, irregularity of joint surfaces, presence of calcified loose bodies and sclerosis and hyperostosis of the glenoid fossa. Secondary calcification/ossification can occur at the various stages of the disease. Although SC of the TMJ usually involves the superior compartment and is confined to the synovial cavity, extension to the periartricular area, such as the glenoid fossa, zygomatic arch, middle ear, parotid gland, skull base and middle cranial fossa have been reported. Given the potential for extracapsular growth and intracranial extension, early and accurate diagnosis is imperative.

CONCLUSION

SC of the TMJ is a rare disease and imaging is an essential diagnostic aid. Growing knowledge of this condition and improvements in imaging diagnostics are increasingly leading to earlier diagnosis and thus to initiation of appropriate therapy.

REFERENCES