History
Teenage female with chronic neck pain

Diagnosis
Osteoid Osteoma

Discussion
Osteoid osteoma is a benign osteoblastic lesion characterized by a nidus of osteoid tissue or even mineralized immature bone, often surrounded by sclerotic reactive bone. At histologic analysis, the nidus is formed by trabeculae of osteoid or woven bone with a highly vascularized stroma. The nidus is less than 1.5 cm in diameter by definition, with larger lesions being called osteoblastomas. The majority of osteoid osteomas occur in the 2nd and 3rd decades of life, with a male predilection of 2–3:1. The majority of spinal osteoid osteomas are located in the neural arch like in this case. The lumbar spine is most commonly affected, followed by the cervical, thoracic, and sacral segments. Patients with spinal osteoid osteoma classically present with painful scoliosis. Aspirin usually provides pain relief. The natural history of osteoid osteoma is not fully understood, however, and spontaneous resolution has been reported.

Bone scintigraphy is almost invariably positive. CT is generally regarded as the preferred cross-sectional technique for the demonstration and precise localization of the nidus. Osteoid osteoma characteristically manifests as a low-attenuation nidus with central mineralization and varying degrees of perinidal sclerosis. The nidus of osteoid osteoma can have a very heterogeneous, variable appearance at MR imaging, making detection and characterization difficult. MR imaging is sensitive in detecting nonspecific changes in the bone marrow and soft tissues, which may have a misleading aggressive appearance. Differential includes osteoblastoma, osteomyelitis, metastasis, fracture.

Findings
CT-well circumscribed lytic lesion with sclerotic margin and faint matrix calcifications in the posterior elements
MRI-well circumscribed isointense T1, mixed intermediate T2 enhancing lesion in the posterior arch of C2 with surrounding bone and soft tissue edema
Nuclear medicine bone scan-intense uptake in the posterior elements at C2

Reference
Diagnostic Imaging of Solitary Tumors of the Spine: What to Do and Say1
Mathieu H. Rodallec, MD, Antoine Feydy, MD, PhD, Frédérique Larousserie, MD, et al. July 2008
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