American College of Veterinary Radiology  
Radiology Board Certification Examination Program  

Major Category: 4 - MRI  
Minor Category: B - Musculoskeletal  
Topic (e.g., 1, 2):  
Species: Equine  

**Signalment and history:**  
- 22 year old, brood mare  
- Signs of difficulty eating noted recently  
- Right exophthalmos and periorbital swelling  
- Horse resists opening the mouth for oral exam  

**Item 1 - Observation - List the most important imaging findings**  
- Diffuse hyperintensity in T2w images affecting the right masticatory muscles  
- Diffuse sub-q thickening on the right aspect of face surrounding right eye  
- Destruction of right zygomatic arch and replacement by tissue that is hyper T2/hypo T1  
- Destruction of right zygomatic process of temporal bone, temporomandibular joint and temporal bone adjacent to right temporal lobe of brain  
- Brain looks unaffected  
- Multiple nodular lesions scattered throughout the head; these are uniformly hypo T2/hyper T1 indicative of melanin  

**Item 2 - Synthesis - List, in order of priority, the most likely differential diagnosis(es)**  
- Destructive/invasive lesion centered on right temporal bone and zygomatic arch, likely malignant neoplasm, e.g. carcinoma  
- Atrophy of right masticatory muscles  
- Multiple melanomas, likely incidental (grey horse)  

**Successful candidates:**  
- Identified both disease processes and were able to determine that the imaging characteristics of the melanoma were dissimilar to the aggressive mass lesion  
- Recognized that the well circumscribed melanomas were unlikely to be responsible for the osteolysis.  

**Unsuccessful candidates**  
- Failed to identify destruction/lysis, thus were unable to appropriately synthesize the significance of each lesion, frequently assuming that the nodules were cause of clinical signs.  
- Many unsuccessful candidates specifically stated that the TMJ on the right was normal  
- Failed to associate aggressive lesion as the cause of the patient’s clinical signs.  

There were no recommendation points on this case, though candidates proffered both appropriate (biopsy temporal bone lesion) and inappropriate (biopsy nodules, three view met-check, MMM titres).