ORGANIZATION: **Los Angeles Radiological Society**
VENUE: **66th Annual Midwinter Radiology Conference**
DATE: **February 22-23, 2014 – 3:00pm – 4:30pm Saturday**
TITLE: **Neuroimaging of White Matter Diseases and CNS Infections/Inflammations**

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Anne G. Osborn, MD – *Distinguished Professor of Radiology, The University of Utah School of Medicine*

ANSWER KEY

PRESENTATION 1: **White Matter Diseases in Children**

QUESTION 1	DISCUSSION RE: ANSWER OPTIONS
In which disease is MR spectroscopy diagnostic: a. Alexander b. Krabbe c. Adrenoleukodystrophy d. Canavan	Answer: D MR spectroscopy is non-specific in all white matter childhood disorders except for Canavan. In this last disorder a specific enzyme is missing which leads to accumulation of n-acetyl aspartate which is highly elevated on MRS, generally about a 10:1 ratio with respect to choline.

REFERENCE FOR QUESTION 1

Grodd, W., et al. "Metabolic and destructive brain disorders in children: findings with localized proton MR spectroscopy." *Radiology* 181.1 (1991): 173-181.

QUESTION 2	DISCUSSION RE: ANSWER OPTIONS
The "tigroid pattern" seen in metachromatic leukodystrophy probably represents: a. Residual myelinated fibers b. Iron deposition c. Areas of restricted ADC d. Deposition of collagen	Although the exact cause of the "tigroid pattern" is not known, it is probably related to presence of residual myelinated fibers. There is no evidence of iron deposition and restricted ADC is generally observed in the callosum. Deposition of collagen in the brain only occurs in the capsules of abscesses.

REFERENCE FOR QUESTIONS 2

Faerber, E. N., J. Melvin, and Eleanor M. Smergel. "MRI appearances of metachromatic leukodystrophy." *Pediatric radiology* 29.9 (1999): 669-672.

PRESENTATION 2: **Demyelinating and Inflammatory Diseases: Beyond Multiple Sclerosis**

QUESTION 3	DISCUSSION RE: ANSWER OPTIONS
All of the following are required for the diagnosis of neuromyelitis optica *except* a. Optic neuritis b. Acute myelitis c. A hyperintense, enhancing cord lesion of three or more contiguous segments d. NMO-IgG seropositivity	The correct answer is (d). The **required** diagnostic criteria for NMO are a, b, and c. NMO-IgG seropositivity is considered a **supporting** criterion.

REFERENCE FOR QUESTION 3

Matthews L et al: Distinction of seropositive NMO spectrum disorder and MS brain lesion distribution. Neurology 2013; 80: 1330-7.

QUESTION 4	DISCUSSION RE: ANSWER OPTIONS
The most common intracranial location for inflammatory pseudotumor is a. The cranial meninges b. The brain parenchyma c. Choroid plexus d. Pituitary gland and stalk	Although all the above can be affected, 80% of intracranial inflammatory pseudotumors involve the cranial meninges. Masslike dura-arachnoid thickening is the most common imaging finding. Intracranial pseudotumors frequently mimic meningioma.

REFERENCE FOR QUESTION 4

Nimsky C, Kolodziej M: Inflammatory pseudotumor: a rare intracranial lesion. World Neurosurg 2012 77: 89-90.

PRESENTATION 3: **CNS Infections**

QUESTION 5	DISCUSSION RE: ANSWER OPTIONS
Which of the following does NOT suggest congenital CMV infection: a. Anterior temporal lobe cysts b. Periventricular white matter abns c. Subcortical calcifications d. Cortical dysplasias	Calcifications in congenital CMV are periventricular as the virus exhibits an affinity for developing cells in the germinal matrix zones while calcifications in congenital toxoplasmosis are subcortical or cortical. Cortical dysplasias may be seen in both but anterior temporal cysts are typical of CMV.

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ANSWER KEY

REFERENCE FOR QUESTIONS 5

Clin Microbiol Rev. 2009 ; 22(1): 99–126.

QUESTION 6	DISCUSSION RE: ANSWER OPTIONS
Which one is not an MRI sign of a bacterial abscess? a. Double SWI rings b. Centrally restricted ADC c. Peripherally high rCBV d. Thin, non-nodular rim of contrast enhancement	All are typical signs of a pyogenic abscess except for high perfusion. Perfusion abscess are characterized by low peripheral perfusion and this may be used to differentiate them from metastasis or 1ry tumors.

REFERENCE FOR QUESTIONS 6

Br J Radiol. 2009 ; 82(982):813-20.

Chiang IC, Hsieh TJ, Chiu ML, Liu GC, Kuo YT, Lin WC. Distinction between pyogenic brain abscess and necrotic brain tumour using 3-tesla MR spectroscopy, diffusion and perfusion imaging. Br J Radiol. 2009; 82(982):813-20.