CNS Toxoplasmosis in AIDS

May present as: 1. mass lesion (toxoplasmosis abscess): the most common lesion-causing mass effect in AIDS patients (70–80% of cerebral mass lesions in AIDS42)

2.meningoencephalitis

3. encephalopathy

CNS toxoplasmosis occurs late in the course of HIV infection, usually when CD4 counts are < 200 cells/mm3.

May present as:

Mass lesion (Toxoplasmosis abscess): the most common lesion causing mass effect in AIDS patients (70-80 % of cerebral mass lesions in AIDS [1].

CNS toxoplasmosis and lymphoma are often indistinguishable by conventional contrast-enhanced MRI. There is limited literature on the diagnostic efficacy of dynamic susceptibility weighted contrast enhanced perfusion imaging for differentiating these entities. A study assesses the clinical utility of relative cerebral blood volume (rCBV) for making a diagnosis and determines rCBV thresholds for differentiation using contemporary DSC-MRI.

Thirteen patients with 25 lesions (13 toxoplasmosis and 12 lymphoma) and pre-treatment DSC-MRI were identified retrospectively. Volumetric regions of interest of segmented enhancement were used to extract mean rCBV normalized to normal-appearing white matter for each lesion.

They compared average mean rCBV between all toxoplasmosis and lymphoma lesions using a general mixed model. Three models were also compared for evaluating rCBV-based disease status in each patient: 1) mean rCBV of each lesion using a generalized estimating equation, 2) volume-weighted mean rCBV, and 3) maximum mean rCBV of all lesions using logistic regression.

The average mean rCBV for all toxoplasmosis lesions was 0.98 (95% CI 0.55-1.41) compared to 2.07 (95% CI 1.71-2.43) for all lymphoma lesions, a significant difference (1.09, 95% CI 0.53-1.65, p=0.0013). For the three models used to evaluate rCBV-based disease status in each patient, a significant relationship was observed, with an optimal rCBV threshold of approximately 1.5 for distinguishing lymphoma from toxoplasmosis in each model.

RCBV derived from contemporary DSC-MRI is helpful for distinguishing between cerebral toxoplasmosis and cerebral lymphoma on an individual patient basis and may facilitate more timely initiation of appropriate directed therapy [2].

1)
Chaisson RE, Griffin DE. Progressive multifocal leukoencephalopathy in AIDS. JAMA. 1990 Jul 4;264(1):79-82. PubMed PMID: 2355432.
2)
Dibble EH, Boxerman JL, Baird GL, Donahue JE, Rogg JM. Toxoplasmosis versus lymphoma: Cerebral lesion characterization using DSC-MRI revisited. Clin Neurol Neurosurg. 2016 Dec 2;152:84-89. doi: 10.1016/j.clineuro.2016.11.023. [Epub ahead of print] PubMed PMID: 27940418.