Cytotoxic Lesions of the Corpus Callosum

Cytotoxic lesions of the corpus callosum (CLOCCs) are secondary lesions associated with various entities. CLOCCs have been found in association with drug therapy, malignancy, infection, subarachnoid hemorrhage, metabolic disorders, trauma, and other entities. In all of these conditions, cell-cytokine interactions lead to markedly increased levels of cytokines and extracellular glutamate. Ultimately, this cascade can lead to dysfunction of the callosal neurons and microglia. Cytotoxic edema develops as water becomes trapped in these cells. On diffusion-weighted magnetic resonance (MR) images, CLOCCs manifest as areas of low diffusion. CLOCCs lack enhancement on contrast material-enhanced images, tend to be midline, and are relatively symmetric. The involvement of the corpus callosum typically shows one of three patterns: (a) a small round or oval lesion located in the center of the splenium, a lesion centered in the splenium but extending through the callosal fibers laterally into the adjacent white matter, or a lesion centered posteriorly but extending into the anterior corpus callosum. CLOCCs are frequently but not invariably reversible.

Although CLOCCs are nonspecific with regard to the underlying cause, additional imaging findings and the clinical findings can aid in making a specific diagnosis. Radiologists should be familiar with the imaging appearance of CLOCCs to avoid a misdiagnosis of ischemia. When CLOCCs are found, the underlying cause of the lesion should be sought and addressed [1)].

Cytotoxic Lesions of the Corpus Callosum in subarachnoid hemorrhage.

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Starkey J, Kobayashi N, Numaguchi Y, Moritani T. Cytotoxic Lesions of the Corpus Callosum That Show Restricted Diffusion: Mechanisms, Causes, and Manifestations. Radiographics. 2017 Mar-Apr;37(2):562-576. doi: 10.1148/rg.2017160085. Epub 2017 Feb 6. PMID: 28165876.