Brain MRI in Lyme disease

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https://danielcameronmd.com/radiologic-findings-lyme-disease/

The authors review the role of medical imaging for various infectious diseases including the Zika virus, measles, influenza, Chagas disease, syphilis, and Lyme disease. The authors include a discussion of a brain MRI in Lyme disease.

Although it is uncommon, Lyme disease patients have presented with positive radiologic findings, writes Alves Simão. Test results, however, are often non-specific.

Several studies have identified brain imaging abnormalities in Lyme disease patients that resemble those found in individuals with multiple sclerosis. MRI tests have shown “multiple bilateral foci of T2 hyperintensity in the periventricular or subcortical white matter” in Lyme disease patients.

In addition, the fluorodeoxyglucose PET (FDG-PET) scan has revealed “two distinct patterns of brain hypometabolism in patients with Lyme disease: specific temporal lobe hypometabolism and diffuse cortical hypometabolism,” the authors write.

Although there is “no clear diagnostic pattern,” memory disturbances are associated with the temporal lobes. And the FDG-PET scan “may show the affected areas in patients who present with neurologic involvement of Lyme disease.”

Other neurological findings

Furthermore, MRI tests have identified “thin non-nodular nerve enhancement” in patients with facial nerve palsy, the authors write. “A protocol similar to that described to evaluate cranial nerve involvement of neurosyphilis may be applied to patients with Lyme disease.”

These findings can be seen in idiopathic palsies, including Bell’s palsy. “Lyme disease-related facial nerve palsy may be indistinguishable from idiopathic facial palsies and palsies from other causes at imaging,” the authors point out.

Meanwhile, the “enhancement of meninges and cranial or spinal nerves” has been seen by MRI in meningoradiculitis due to Lyme disease. Meningeal enhancement is also found in patients with both inflammatory and non-inflammatory conditions, Alves Simão explains.

Radiological imaging can help in differentiating between direct central nervous system damage and secondary encephalopathy, the authors conclude.

Unfortunately, most “CT and MRI findings of the brain and spine in patients with Lyme disease are often within normal limits, even among patients with known neurological manifestations,” writes Alves Simão.

However, "normal [radiological] findings should not be a reason to rule out the diagnosis, especially if the clinical and epidemiologic contexts are compatible."

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References:

1. Alves Simão AK, Amaral LLFD, Inada BSY, Silveira CF, Campos CMS, Freitas LF, Bonadio V, Marussi VHR. Neuroimaging of Emergent and Reemergent Infections. Carmo RLD. Radiographics. 2019 Oct;39(6):1649-1671.
