Gadolinium enhancement and white matter lesion in extracranial carotid artery aneurysms

V.E.C. Pourier, C.J.H. van Laarhoven, J. Hendrikse, T. Leiner, MDI Vergouwen, G.J. de Borst

ABSTRACT

PURPOSE

To determine the presence ECAA disease activity and its effect on the brain to possibly predict future cerebrovascualr outcome.

METHODS

MRA with gadolinium administration was prospectively performed in 15 patient with 17 ECAs. Enhancement was considered present if there was a hyperintensity of the wall on the MRA after gadolinium administration, that was not present on the MRI before gadolinium administration. Two experienced neuroradiologists (blinded) independently scored two rounds of the MRI images, with a minimum of two weeks between the measurements, scoring the presence of gadolinium enhancement and WML. The agreement on gadolinium enhancement and the presence of WML was calculated using Kappa statistics.

RESULTS

Gadolinium enhancement was present in 14 of the 17 ECAs. The intra-observer agreement for gadolinium enhancement was excellent with a Kappa of 0.82 (95% CI: 0.58-1.0).

WML presence ranged from 7 to 11 of the 15 patients. The intra-observer agreement for WML using the Fazekas scale ranged from substantial to excellent with a Kappa of 0.70 and 0.91, with an average agreement of 0.81.

CONCLUSION

Gadolinium enhancement and WML are present in asymptomatic ECAs. If future studies prove that vessel wall enhancement and an increase in white matter lesions are present in these asymptomatic ECAs, then vessel wall MRA may cause a change in the clinical approach and management of asymptomatic ECAs.

DISCLOSURES

None

BACKGROUND

MRA with gadolinium administration was prospectively performed in 15 patients with 17 ECAs. Gadolinium enhancement in the majority of ECAs and most patients had ipsilateral WML.

RESULTS

Table 1. inter- and intra-observer agreement on Gadolinium enhancement

<table>
<thead>
<tr>
<th>Agreement</th>
<th>Value</th>
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<tbody>
<tr>
<td>Intra-observer</td>
<td>0.82 (0.58-1.0)</td>
</tr>
<tr>
<td>Inter-observer</td>
<td>0.70 (0.42-0.98)</td>
</tr>
<tr>
<td>Kappa</td>
<td>0.91 (0.74-1.0)</td>
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</tbody>
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Figure 1. Unilateral gadolinium wall enhancement (red)

Figure 2. CT scan of same person as figure 1 showing bilateral ECAA

Figure 3. Bilateral gadolinium wall enhancement (red)