Neurosarcoidosis: MRI and CSF findings in our patients

Vucinic Violeta(1,2), Rasulic Lukas(3,9), Stjepanovic Mihailo(10), Filipovic Snezana(11), Omicikus Maja(10), Videnovic-Ivanovic Jelica(1,2)

(1) Department of sarcoidosis, Clinic of Pulmonary Diseases, Clinical Center Serbia, Belgrade, Serbia  
(2) Medical School, University of Belgrade, Serbia  
(3) Neurosurgery Clinic, Clinical Center Serbia, Belgrade

Abstract

BACKGROUND: Establishing the diagnosis of neurosarcoidosis may be difficult, so the goal of this study was to elucidate the relation between clinical symptoms, MRI findings, and cerebrospinal fluid (CSF) findings. METHODS: 73 patients with probable diagnosis of neurosarcoidosis were analyzed (51 females; 22 males), mean age 51.73 years, the mean follow-up period 7 years. 70 patients (95.9%) had chronic biopsy positive sarcoidosis. 3 patients had acute sarcoidosis at the time they experienced symptoms of possible neurosarcoidosis. MRI findings were classified according to Zajicek J.P, Scolding N.J, et al. Central nervous system sarcoidosis diagnosis and management.

RESULTS: in 13/63 patients (20%) ACE in CSF was not detected (0 U/L). 51/63 patients (80%) had different CSF ACE levels ranging from 1-15 U/L. All patients were symptomatic and besides constitutional symptoms of sarcoidosis they had: headache 47/92.2%, vertigo 24/47.1%, cranial nerve involvement (facial palsy) 7pts/13.7%, blurred vision 10/19.6% and answers 2 patients (3.9%). Comparing the MRI appearances in patients with positive ACE in CSF we found:

1. Spinal cord lesions - 5 patients (5.9%)
2. Hydrocephalus – 2 patients (3.9%)
3. Meningeal enhancement - 18 patients (35.3%)
4. Parenchymal lesions - 31 patients (66%)
5. White matter lesions - 11 patients (23.4%)
6. Normal MRI findings - 2 patients (3.9%)

CONCLUSIONS: In this study we intended to show a certain relationship between the MRI findings and CSF analyses, emphasizing the significance of the CSF ACE levels. In patients with biopsy positive sarcoidosis (different organs involvement) and probable diagnosis of neurosarcoidosis CSF should be obtained for further analyses among which the ACE level with MRI finding can indicate the diagnosis, because these two examinations correlated in 96% of our patients.

Patients

<table>
<thead>
<tr>
<th>MRI Findings</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spinal cord lesions</td>
<td>3</td>
<td>(5.9%)</td>
</tr>
<tr>
<td>Hydrocephalus</td>
<td>2</td>
<td>(3.9%)</td>
</tr>
<tr>
<td>Parenchymal lesions</td>
<td>31</td>
<td>(66%)</td>
</tr>
<tr>
<td>Meningeal involvement</td>
<td>18</td>
<td>35.3%</td>
</tr>
<tr>
<td>White matter lesions</td>
<td>11</td>
<td>23.4%</td>
</tr>
<tr>
<td>Normal MRI findings</td>
<td>2</td>
<td>3.9%</td>
</tr>
</tbody>
</table>

Conclusions

Increased CSF ACE may have significant role in the diagnosis of neurosarcoidosis, especially in symptomatic patients. This is the least invasive diagnostic procedure in evaluating the diagnosis of neurosarcoidosis.

In patients with already positive diagnosis of sarcoidosis (other organs involvement) and symptoms suggesting neurosarcoidosis, CSF ACE analysis and MRI may improve the accuracy in diagnosis of neurosarcoidosis.

Cerebrospinal fluid findings:
- Lymphocyte pleocytosis (15pts)
- Elevated protein levels (23pts)
- Decreased glucose concentration (4pts)

This agrees with the suggestion that CSF protein and CSF ACE co-vary, as proposed by Zajicek. (Zajicek J.P, Scolding N.J, Foster G, et al. Central nervous system sarcidosis: diagnosis and management. QJM 1999;92:103–17)

However, CSF ACE is a product of sarcoid granulomas, whereas increase in CSF protein is a nonspecific indicator of inflammation.