Role of Magnetic Resonance Spectroscopy (MRS) in Pediatric Neuro-imaging

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INTRODUCTION

Magnetic Resonance Spectroscopy (MRS) can become an important clinical tool, especially with a wide variety of applications in the diagnosis of pediatric brain tumors, post-stroke or post-traumatic white matter (WM) abnormalities, and developmental delay.

METABOLITES

<table>
<thead>
<tr>
<th>Metabolite</th>
<th>Spectrum</th>
<th>Magnetic Resonance Spectroscopy (MRS)</th>
<th>Normal and Delayed Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-acetylaspartate</td>
<td>NAA</td>
<td>T1W, T2W, FLAIR</td>
<td>T1W, T2W, FLAIR</td>
</tr>
<tr>
<td>Creatine</td>
<td>Cr</td>
<td>T1W, T2W, FLAIR</td>
<td>T1W, T2W, FLAIR</td>
</tr>
<tr>
<td>Choline</td>
<td>Cho</td>
<td>T1W, T2W, FLAIR</td>
<td>T1W, T2W, FLAIR</td>
</tr>
<tr>
<td>Lactate</td>
<td>Lac</td>
<td>T1W, T2W, FLAIR</td>
<td>T1W, T2W, FLAIR</td>
</tr>
</tbody>
</table>

NEOPLASM

- MRS can provide valuable information of a neoplasm.
- MRS is valuable in evaluating tumor metabolism and is capable of distinguishing neoplastic from non-neoplastic lesions.
- MRS is a useful technique in assessing the response to therapy and recurrence.

INFARCTION, HYPOXIA AND ISCHEMIA

- MRS can be used to detect changes in cerebral metabolism associated with infarction.
- MRS is useful in assessing areas of cerebral hypoxia and ischemia.
- MRS can be used to detect changes in cerebral metabolism associated with infarction.

METABOLIC DISORDERS

- MRS can be used to detect changes in cerebral metabolism associated with metabolic disorders.
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NORMAL AND DELAYED DEVELOPMENT

- MRS can be used to detect changes in cerebral metabolism associated with normal and delayed development.
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CONCLUSION

MRS can be used to detect changes in cerebral metabolism associated with various clinical conditions.