The effects of chronic lower back pain on cognitive function

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Background

- Pain is known to impair cognitive function.
- The present evaluation was designed to characterise and quantify the extent of disruption to cognitive function in patients with chronic pain.
- Pain assessment includes pain intensity and pain impact.
- A System for all Phases of drug development
- Used in over 1300 clinical trials worldwide since 1984

Methods

- 56 adults aged 23 to 64 years (mean 45), with a diagnosis of chronic low back pain according to the inclusion criteria of Quebec Task Force Class 1 to 3 (confirmation of pain score of 3 to 9 (on numeric rating scale), participated in this study.
- The patients were allowed occasional medication with paracetamol or paracetamol plus-codeine (maximum allowed daily doses paracetamol 2 g and codeine 100 mg).
- They were assessed on the CDR System, a widely used automated cognitive test system.

Results

- The scores of the patients on the various measures were compared to age-matched healthy controls.

Conclusions

- Further studies are required to determine the relationship between pain and cognitive function.

References

- Wesnes K (2012). The importance of such findings is that the dentate gyrus is involved in neurogenesis, and compromised neurogenesis is believed to account for the memory deficits seen in normal ageing and MCI (Ohm, 2007; Tatebayashi, 2003).
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- The findings of the present study provide further evidence for the role of pain in the reduction of memory function in patients with chronic pain.

Tables

<table>
<thead>
<tr>
<th>CDR System Measures</th>
<th>Units</th>
<th>Mean of Controls</th>
<th>S.D.</th>
<th>Mean for patients</th>
<th>Effect Size</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Power of attention</td>
<td>msec</td>
<td>1.093</td>
<td>1.097</td>
<td>1.165</td>
<td>0.66</td>
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<td>Continuity of attention</td>
<td>Units</td>
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<td>3.203</td>
<td>90.02</td>
<td>0.30</td>
<td>0.0475</td>
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<td>Simple reaction time</td>
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<td>33.13</td>
<td>28.21</td>
<td>0.78</td>
<td>&lt;0.0001</td>
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<td>Choice reaction time</td>
<td>msec</td>
<td>429</td>
<td>55.83</td>
<td>45.88</td>
<td>0.53</td>
<td>0.0003</td>
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<tr>
<td>Digit vigilance</td>
<td>%</td>
<td>97.49</td>
<td>4.124</td>
<td>96.18</td>
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<td>0.0343</td>
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<td>Digit vigilance false alarms</td>
<td>#</td>
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<td>1.308</td>
<td>1.196</td>
<td>0.17</td>
<td>0.2617</td>
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<td>Digit vigilance speed</td>
<td>msec</td>
<td>4.076</td>
<td>40.12</td>
<td>42.36</td>
<td>0.40</td>
<td>0.0072</td>
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</tbody>
</table>

Conclusions

- This study has identified a selective profile of impairments to aspects of focussed and sustained attention, working memory and episodic memory which in patients with chronic lower back pain.

Epidemiology: Implications for Neurogenesis

- The ability to correctly identify similar but different pictures in the picture recognition task was significantly compromised, but not the ability to recognise the original pictures.
- The opposite was seen for word recognition, where only the ability to remember the previously presented words was significantly impaired.
- The CDRpicture recognition task has been identified to detect selective impairments in the ability to correctly reject similar but different pictures in normal ageing and mild cognitive impairment (MCI; Wesnes, 2010).

The Importance of Such Findings

- The importance of such findings is that the dentate gyrus is involved in neurogenesis, and compromised neurogenesis is believed to account for the memory deficits seen in normal ageing and MCI (Ohm, 2007; Tatebayashi, 2003).
- The findings of the present study provide further evidence for the role of pain in the reduction of memory function in patients with chronic pain.

Implications

- The importance of such findings is that the dentate gyrus is involved in neurogenesis, and compromised neurogenesis is believed to account for the memory deficits seen in normal ageing and MCI (Ohm, 2007; Tatebayashi, 2003).
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