Long-Term Functional Effects of Medulloblastoma Treatments

Serena Khiantani, MOT/S; Pamela Ponce, MOT/S; Bailey Diprima, MOT/S; Sarika Maymoundok, MOT/S; Leah Murray, MOT/S
Faculty Advisor: Anita Witt Mitchell, PHD, OTR, FAOTA
Community Practitioner: Heather Clabo, OTR/L
University of Tennessee Health Science Center

WHAT IS MEDULLOBLASTOMA?
Most common primary malignant CNS brain tumor in children
Usually appears as a solid mass in the cerebellum between the brain and brain stem
Classified by 4 subgroups: WN 1, SHH, Group 3, Group 4
Survival rates are around 60-80%

BACKGROUND & RATIONALE
• Increased survival rates due to advances in treatment
• Survivors are at risk for lasting effects that may impact everyday functional performance and quality of life
• Knowledge of long-term effects could guide client/caregiver education and preventative approaches in occupational therapy

PICO QUESTION & ELEMENTS
In children ages 4-18, what are the long-term functional effects of medulloblastoma treatments?

SEARCH METHODOLOGY
Databases:
• Scopus, Cochrane Library, CINAHL, PubMed, Ovid MEDLINE

Inclusion Criteria
• Adult medulloblastoma survivors who received treatment between the ages 4-18
• Focused on functional effects and/or quality of life
• Explored effects that may connect to functional performance

Exclusion Criteria
• Clients developed secondary disease(s) as a result of the diagnosis and/or treatment received
• Published more than ten years ago
• Single case studies

MAIN FINDINGS & LIMITATIONS

<table>
<thead>
<tr>
<th>LEVEL OF EVIDENCE</th>
<th>STUDY AND QUALITY SCORE</th>
<th>MAIN FINDINGS</th>
<th>LIMITATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>Moxon-Emre et al., 2016 Quality Score: 77%</td>
<td>• Limiting radiation exposure produces ↑ intellectual outcomes (Moxon-Emre et al., 2016; Szentes et al., 2018)</td>
<td>Small sample</td>
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<tr>
<td></td>
<td>Brinkman et al., 2016 Quality Score: 77%</td>
<td>• ↓ in processing speed, attention, working memory, and verbal skills (Moxon-Emre et al., 2016; Szentes et al., 2018)</td>
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<tr>
<td></td>
<td>Szentes et al., 2018 Quality Score: 95%</td>
<td>• ↑ in generalized and separation anxiety (Szentes et al., 2018)</td>
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<tr>
<td>III</td>
<td>Edelstein et al., 2011 Quality Score: 77%</td>
<td>• ↓ in working memory regardless of age of treatment</td>
<td>Small sample</td>
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<td>Cognitive and physical signs of early aging regardless of age of diagnosis</td>
<td>Retrospective study</td>
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<td></td>
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<td>Younger age of diagnosis associated with ↓ in IQ and academic scores</td>
<td>Only focuses on radiation treatment</td>
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<tr>
<td>IV</td>
<td>Kennedy et al., 2014 Quality Score: 86%</td>
<td>• ↓ in cognition (e.g., executive function, attention capacity, processing speed)</td>
<td>Not in the US</td>
</tr>
<tr>
<td></td>
<td>Saary &amp; Emanuelson , 2010 Quality Score: 90%</td>
<td>• Not in the US</td>
<td>No true control</td>
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</tbody>
</table>

IMPLICATIONS FOR OT PRACTICE
Assessment of processing speed, working memory, verbal skills, executive function, and attention is warranted
Monitor cognitive effects of OT interventions using a Goal Attainment Scale

GOAL ATTAINMENT SCALE

<table>
<thead>
<tr>
<th>Goal Attainment Scale</th>
<th>Criteria for Goal Attainment</th>
</tr>
</thead>
<tbody>
<tr>
<td>+2</td>
<td>Engages in [active task] for ≥25 minutes</td>
</tr>
<tr>
<td>+1</td>
<td>Engages in [active task] for ≥15-20 minutes</td>
</tr>
<tr>
<td>0</td>
<td>Engages in [active task] for ≥10-15 minutes</td>
</tr>
<tr>
<td>-1</td>
<td>Engages in [active task] for ≥5-10 minutes</td>
</tr>
<tr>
<td>-2</td>
<td>Engages in [active task] for ≤5 minutes</td>
</tr>
</tbody>
</table>

REFERENCES

- Example search terms used
- Exclusion criteria
- Main findings
- Limitations
- Level of evidence
- Study and quality score
- Background & rationale
- PICO question & elements
- Long-term functional effects
- Medulloblastoma
- Children
- Radiation
- Treatment
- Outcome
- Functional deficits
- Cognitive
- Physical
-什
- Process
- Speed
- Attention
- Working memory
- Verbal skills
- Executive function
- Goal attainment scale
- References

* See references for full version