Coping with Attention, Learning and Memory Problems after Transplant

Celebrating a Second Chance at Life Survivorship Symposium

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Overview

- What is “cancer-related cognitive impairment”?
- Who is affected?
- How long does it last?
- What causes it?
- How is it measured?
- What can be done about it?

Cognition

- Problem solving
- Reasoning
- Learning and Memory
- Attention
- Language
Cancer-related Cognitive Impairment

- Occurs before, during and/or after treatments
- Different skills can be affected
- Sometimes called “chemobrain”

Multiple Suspects
Incidence

About 40% (2 out of 5 patients) have cognitive impairment 5 years post-transplant

Duration

- Months to years
- Permanent in some patients
- Some show difficulties later on
- Some worsen over time
Individual Course

Risk Factors: Non-modifiable

- Older age
- Genetic factors
- Disease severity
- Treatment intensity/duration
Risk Factors: Modifiable

- Stress
- Sleep disruption
- Fatigue
- Low mental activity
- Sedentary

Causes

- Inflammation
- Neurotoxicity
- DNA Damage
- Mitochondrial Damage

Brain Injury
Lower Brain Volumes After BMT

Injured White Matter Pathways After BMT
Neuropsychological Assessment

- Interview
- Review medical records
- Several hours of tests
- Report/review results
- Annual follow-up

How To Get Neuropsychological Exam

- Request referral to Neuropsychology
  - Neurology/Neuro-oncology service
- Billed to health insurance
Sensitivity of Neuropsychological Testing

- Lack "real-world" applicability
- Administered in highly controlled environment
- Often missing “baseline” (pre-treatment) evaluation
  - “Normal” test results may not reflect decline from previous ability
- Research underway to improve testing
  - Emphasis on patient reports

Interventions

- Physical Activity
- Cognitive Training
- Cognitive Rehabilitation
- Medication
Physical Activity

- Promotes neurogenesis
- Improves cardiovascular function
- Improves cancer-related fatigue
- Improves functional capacity

Physical Activity and White Matter Pathways

Sedentary  Exercise
Guidelines for Brain Health

• 150 mins moderate intensity aerobic exercise per week
  – Brisk walking
  – Riding a bike
  – Gardening

• 120 mins vigorous intensity
  – Jogging
  – HIIT (high intensity interval training)

Alternatives

• Gentle yoga
• Stretching
Cognitive Training

Trained Brain


Trained Brain, Mackey, A. et al. 10.1523/JNEUROSCI.4141-12.2013

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Active Journaling

- Describe events, thoughts, feelings
- Analyze, interpret, integrate
- Concise, organized
- Grammar, spelling

Examples

- What inspires you and why?
- What interactions did you have with others and what did they mean to you?
- What new things did you learn?
- What do you think about certain events, ideas or people and why?
Language Learning

- Language training results in neuroplasticity
- Improved memory and concentration skills
- Don’t have to become fluent to have benefit

Music

- Musical training results in neuroplasticity
- Musical activity protects brain
- Don’t have to go on tour to have benefit!
Mental Exercise

- Regular, consistent (daily)
- Something you enjoy
- Challenging (Goldilocks)

Cognitive Reserve

- Might not notice changes in daily life
- Improves brain resilience and reserve
  - Increase your brain “bank”
Cognitive Rehabilitation

- In-clinic cognitive exercises, compensatory strategies
- Occupational therapy, neuropsychology
- Requires referral/billed to insurance
- Not widely available

Compensatory Strategies

- External devices for cuing, reminding, alerting
  - Notebook, planner, smartphone
- Managing situational demands
  - More time, doing one thing at a time
Workplace Accommodations

- Americans with Disabilities Act (ADA)
- Short/long term disability benefits
- Workplace modifications
  - Reduced hours/workload, relocating desk to quieter area, partnering with colleague
- Requires supporting documentation from qualified provider

Stimulant Medication

- Help with attention/concentration and fatigue
- Insomnia and other side effects
- Clinical trials not impressive
  - Clinical experience suggests positive effects
  - Neuropsychological testing might not be sensitive to effects
Supplements

- Evidence not consistent
- Few studies
- Sensitivity of cognitive measures

Physical *plus* Mental Exercise

- Most consistent supporting evidence
- Physical activity generates new brain cells
- Mental activity helps these new cells become “wired in”
- Protect against effects of aging and future injury/illness
Summary

- About 2 out of 5 BMT recipients experience chronic cognitive problems
- These result from alterations of the brain
- It is important to manage modifiable risk factors
- Regular physical + mental activity is the best treatment
Questions?

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