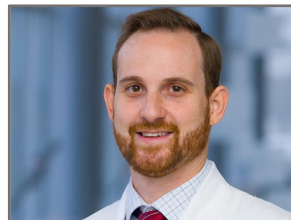




Coping with Attention, Learning and Memory Challenges after Transplant

Celebrating a Second Chance at Life
Survivorship Symposium

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Coping with Attention, Learning and Memory Challenges After Transplant

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Disclosures

- None

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Cancer Survivorship

- Cancer survival rates have been increasing over the past several decades.
- Unfortunately, for some of these individuals, survivorship includes dealing with the side effects of cancer and its treatments.
- Some of these side effects may lead to poor function and low quality of life.

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Cognitive impairment is very common

- Reported in as many as 60% of cancer patients after treatment.
- A history of cancer is associated with a 40% increase in the likelihood of self-reported memory problems.

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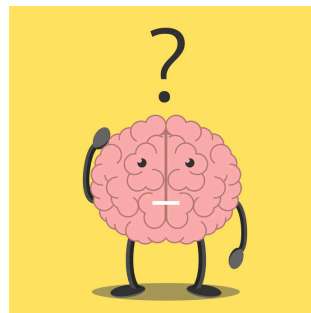
What is cognition?

- A collection of different domains that help control how we create, organize, process, store and retrieve our thoughts.
- Examples include:
 - Memory
 - Thought organization
 - Attention
 - Concentration
 - Information processing speed

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What is cognitive impairment?

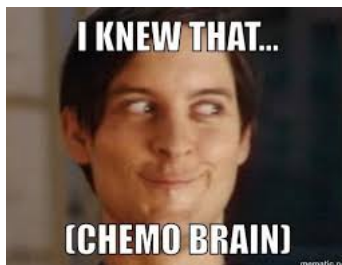
- Objective –
 - decreased function in all or specific cognitive domains compared to self or the normal population.
- Subjective –
 - feeling of decreased ability to think or perform cognitive functions compared to your “normal” baseline.



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Cognitive impairment after stem cell transplant

- Frequently reported in patients after transplant
- Subjective feelings of cognitive impairment do not always correlate with objective findings on neuropsychological testing
- “chemo brain”
- “chemo fog”



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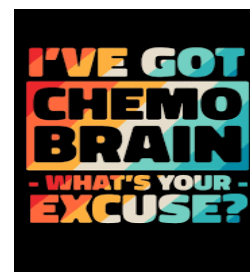
What causes cognitive impairment after transplant?

- Loaded question
- Still not completely known
- Some evidence supports increased inflammation playing a role.
- Cancer itself has been associated with cognitive impairment compared to healthy controls.

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What causes cognitive impairment after transplant?

- Chemotherapy
- Medical comorbidities (other medical issues)
- Medications
- External factors
- Some research suggests that just being aware of potential cognitive side effects can make it more likely to experience cognitive side effects.



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What causes cognitive impairment after transplant? **Chemotherapy**

- There appears to be a significant association between chemotherapy and cognitive function
- The higher the dosage of chemotherapy, the greater the impact on cognitive function
- The extent, pattern and persistence of this dysfunction can be variable

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What causes cognitive impairment after transplant? **Medical comorbidities (additional medical problems)**

- Several chronic diseases have been associated with cognitive impairment
 - Diabetes
 - Heart failure
 - Chronic lung disease
- Kidney and liver disease may affect the way you metabolize and clear medications.
- Increased age associated with risk of cognitive impairment

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What causes cognitive impairment after transplant? Epigenetic factors

- Epigenetics are reversible factors that affect the way your genes work.
- Some research suggests that chemotherapy affects this process in the front portion of your brain that helps with memory and executive functions.



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What causes cognitive impairment after transplant? External factors

- Sleep disorders
- Psychological distress
- Stress
- All have been found to be associated with cognitive problems after stem cell transplant

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What causes cognitive impairment after transplant? Fatigue

- Several studies have found that fatigue is independently associated with symptoms of cognitive impairment
- Fatigue is associated with greater feeling of cognitive problems one year after transplant.
- Naps do not seem to help



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Diagnosing Cognitive Impairment

- Unfortunately, there currently are not great screening tools for cancer related cognitive impairment.
- Subjective complaints of cognitive impairment have not been consistently correlated with neuropsychological testing results.

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Diagnosis – What your doctor might do

- Physical exam
- Lab work to rule out underlying medical conditions or metabolic abnormalities that could be contributing such as:
 - Kidney disease
 - Abnormal thyroid function
 - Electrolyte abnormalities
 - Certain vitamin deficiencies such as low B12
- Neuropsychological testing
- Imaging may be warranted although there are no specific changes on brain imaging associated with cancer-related cognitive impairment.

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Impact of Cognitive Impairment

- Decreased functioning
- Difficulty returning to work or school
- Increased levels of distress
- Decreased quality of life

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Treatment

- Reassurance and validation
- In most cases, cognitive impairment does not worsen and may improve over time.

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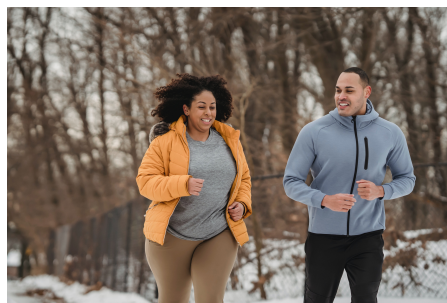
Treatment - Fatigue

- Cognitive behavioral therapy may help with fatigue as well as cognitive symptoms.
 - This may include addressing unhelpful thoughts or behaviors, developing positive routines, managing stress, reducing avoiding behaviors, etc...
- Occupational therapy for energy conservation techniques and functional assessments which help with a persons ability to perform daily tasks, jobs or roles.

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Treatment - Exercise

- The wonder drug!
- Exercise has been shown in many studies to improve cognition, fatigue, sleep, function and quality of life.
- If exercise came in a pill form, it would be prescribed to every single cancer patient on the planet.



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Treatment –Sleep

- Cognitive behavioral therapy for insomnia (CBT-I)
 - Focuses on identifying thoughts, feelings and behaviors that contribute to poor sleep
- Practicing good sleep hygiene
 - Consistent bedtime and wake up time
 - Dark, quiet room – no blue light
 - Comfortable temperature
 - No electronics
 - Bed only for sleep and sex
 - Avoid caffeine and alcohol before bed
- Sleep medications



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Treatment – Psychosocial factors

- Stress and psychological management
- Cognitive behavioral therapy/psychotherapy
 - can address unhealthy thought or behaviors
 - can help manage distress
 - may help with fatigue and cognitive function
- Medications to treat anxiety and depression.
- Mindfulness, relaxation, meditation, etc.



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Treatment - Rehabilitation

- Cognitive rehabilitation to improve brain function
- Brain training
- Adaptive strategies
 - Memory books/planners
 - Reminders/alarms
 - Minimizing distractions



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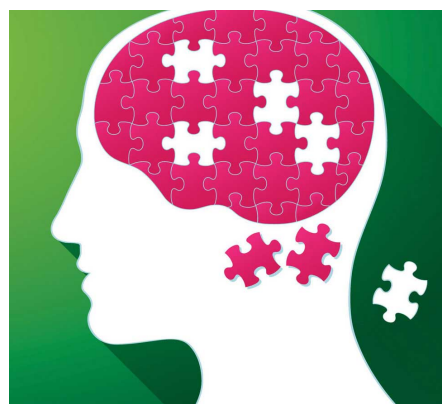
Treatment - Medications

- In some cases, medications may be useful
- Several neuro-stimulants have been investigated as potential treatments for cancer-related cognitive impairment
 - Methylphenidate
 - Modafinil
 - Donepezil
- Preliminary studies have shown positive results on cognition and/or fatigue with these medications, which are generally well tolerated.
- Potential side effects and risk/benefit analysis should be taking into account prior to trying any of these medications.

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Summary

- Cognitive impairment after stem cell transplant is complicated
- The best treatment often uses multiple approaches to address the problem
- In most cases, cognitive impairment does not worsen and may improve over time.



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Questions?



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