

Chemobrain, Steroid Rage and Other Ways Transplant Meds Affect Your Brain

Celebrating a Second Chance at Life Survivorship Symposium

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Learning Objectives:



At the conclusion of the workshop, attendees should have a clear understanding of the following:

1. Medications that can contribute to “chemo brain” after HCT.
2. What steroid rage is, how often it happens and whether it can be prevented.
3. Whom to contact for help if a patient is experiencing steroid rage.
4. How steroid rage is treated.
5. The impact of other transplant medications on the brain

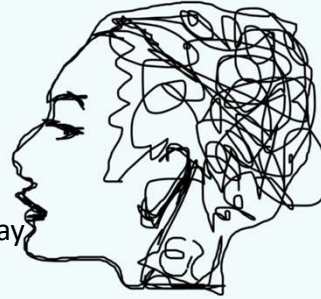


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What is “chemo brain?”

- Patients taking chemotherapy feel
 - Less focused
 - Longer time thinking of what they want to say
 - Short-term memory problems
 - Usually mostly feeling delayed
- NOT
 - Personality changes
 - Outright confusion
- Symptoms may start weeks or months after chemotherapy, but do not continue to get worse over time – in fact, some people improve years later



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Is chemo brain real?

YES

- Everything you experience is real!
- The medical term is chemotherapy-related cognitive impairment (CRCI)
- There are specific biological explanations for CRCI
 - Damage to neurons
 - Damage to the hippocampus, where memory is stored
 - Extra inflamed cells in the brain
- You can see CRCI on fMRI, a type of imaging that looks at how much blood flow is going to individual parts of the brain

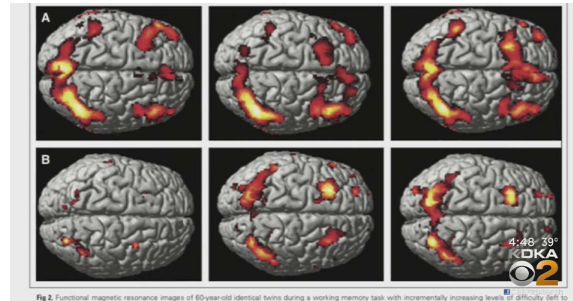


Fig 2. Functional magnetic resonance images of 60-year-old identical twins during a working memory task with incrementally increasing levels of difficulty. Left to

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Which medications cause chemo brain?

- Any type of chemotherapy can contribute
 - Methotrexate #1 known cause for transplant patients
- Intrathecal (spine injected) chemotherapy more likely to contribute
- Irradiation (not a chemotherapy) also contributes to cognitive change and is often given with chemotherapy

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What is the treatment for chemo brain?



- Cognitive Retraining Therapy –
 - Specific exercises, not just to practice
 - Finding ways to rely on what your brain is already doing well
 - Providers include psychologists, psychiatrists, physical therapists/occupation therapists, or as part of “CRT” centers
 - Studies are ongoing!

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What is the treatment for chemo brain?



- Namenda is being studied for protection
 - Early studies are promising
 - Has shown some protection for irradiation
- Thiamine is being studied for protection

Nakamura ZM et al. A phase II single-arm trial of memantine for prevention of cognitive decline during chemotherapy in patients with early breast cancer: Feasibility, tolerability, acceptability, and preliminary effects. Cancer Med. 2023 Jan 16. doi: 10.1002/cam4.5619. Epub ahead of print. PMID: 36645168.

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How do steroids affect the brain?

• Common

- Euphoria
- Hypomania
- Agitation
- Anxiety
- Insomnia
- Distractibility
- Fear
- Indifference
- Irritability



- Lethargy
- Lability
- Restlessness
- Tearfulness
- Cognition changes
 - Verbal memory

• Less common

- Psychosis
 - Hallucinations
 - Delusions
 - Disorganization
- Delirium
- Mania
- Mixed State
- Suicidal ideation

28% mild to moderate reactions
6% severe

Thomas P. Warrington, J. Michael Bostwick. Psychiatric Adverse Effects of Corticosteroids. Mayo Clinic Proceedings. 81(10), 2006.

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When steroids are stopped or significantly reduced...

- Depression
- Fatigue
- Lethargy
- Malaise
- Anxiety
- Mania
- Delirium
- Known to be common, but frequency is unknown



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Timeline...

- Any time!
 - Immediately (39% first week)
 - Shortly (62% within 2 weeks)
 - Delayed (83% within 6 weeks)
- Symptoms last up to 2 months after discontinuation

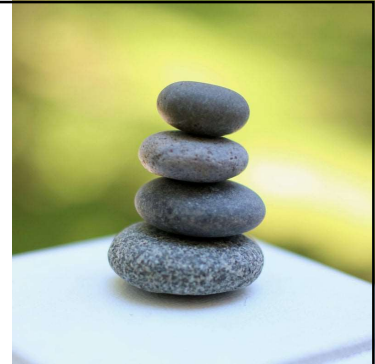


JW Newcomer, S Craft, T Hershey, K Askins, ME Bardgett. Glucocorticoid-induced impairment in declarative memory performance in adult humans
J Neurosci, 14 (1994), pp. 2047-2053.
DA Lewis, RE Smith. Steroid-induced psychiatric syndromes: a report of 14 cases and a review of the literature J Affect Disord, 5 (1983), pp. 319-332.
RC Hall, MK Popkin, SK Stickney, ER Gardner. Presentation of the steroid psychoses. J Nerv Ment Dis, 167 (1979), pp. 229-236

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What should I do?

- Expect feeling a little bit emotional
- Ask visitors to leave, sit quietly with a close trusted person
- Tell your transplant or primary doctor immediately if
 - Feeling too excited
 - Feeling distressed
 - Any thoughts of suicide
 - Any “weird” thoughts that don’t make sense or are unlike you
 - Starting not to trust loved ones, feeling someone is watching you
 - Hallucinations (things others cannot see or hear)



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What should I do?

- Your doctor may not be able to take you off steroids, but
 - Schedule can be changed
 - Other medications can help, like Zyprexa, which also improves appetite in cancer patients
 - May require inpatient observation
 - Can advise you about reducing risk, helping calm your environment and thoughts

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What other common transplant medications may affect my brain function?

- Antibiotics etc
 - **Voriconazole** – hallucinations
 - Posaconazole - confusion
 - **Cipro** – excitation, insomnia, dizziness
 - **Cefepime** –delirium
 - Clarithromycin –delirium
 - Bactrim –delirium, anxiety, depression, insomnia
 - Valtrex –delirium, depression



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What other common transplant medications may affect my brain function?

- Medications for nausea **often cause sedation**
 - **Ativan, Zyprexa, remeron, compazine**
- **Opiate pain medications often** cause sedation, sometimes confusion
- **Keppra**, for seizure prophylaxis, causes anxiety, depression, personality changes



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What other common transplant medications may affect my brain function?

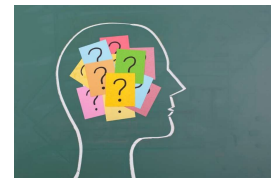


- Campath – insomnia
- **Cellcept – insomnia**
- Busulfan –anxiety, insomnia, depression
- Carmustine -delirium
- Cyclophosphamide -delirium
- Cytarabine -delirium
- Etoposide -delirium
- Fludarabine –delirium, depression, agitation
- Thiotepea –delirium, depression, psychosis

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What do I do with all this information!?

- Knowing what to expect helps people feel calm even when having mental side effects
- For caregivers, knowing to be on the alert to inform the medical team immediately
- Potentially consider Namenda, thiamine, for protection
- Make sure your oncologist knows if you have any psychiatric risk factors!



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QUESTIONS?



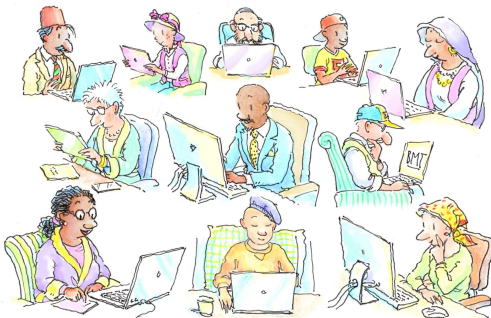
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