



CHEMOTHERAPY-INDUCED COGNITIVE IMPAIRMENT

CHEMO BRAIN

An estimated 15.5 million Americans are living with cancer, and nearly 1.7 million more are expected to be diagnosed in 2018 (American Cancer Society, 2018). Many of these individuals will have chemotherapy or radiation to treat their cancer. The potential for chemotherapy-induced cognitive impairment (CICI) is now a well-established clinical syndrome (Sioka & Kyritsis, 2009). These cognitive impairments are often referred to as “chemo brain” or “chemo fog” and should be taken seriously because it can impact the patient’s quality of life. The incidence rate of long-term CICI for cancer survivors ranges from 16% to 75% (Tchen et al, 2003; Vardy et al, 2007).

CICI is described as difficulties with the patient’s attention, concentration, executive function, learning, memory, reasoning, and visuospatial skills during and after chemotherapy has been discontinued (Argyriou et al, 2011). Overall there is not enough evidence to clearly explain why CICI occurs and further research is needed (Argyriou et al, 2011). CICI is probably multifactorial with various direct and indirect effects on the central nervous system (CNS) and the patient’s cognitive ability (Argyriou et al, 2011). Our brain is protected from other toxins in the body by the blood-brain barrier (BBB). Some commonly used

conventional chemotherapy drugs, such as 5-fluorouracil, are able to pass through the BBB and cause direct damage to the CNS (Vardy et al, 2008). If healthy cells are damaged, from chemotherapy treatment, the body experiences an inflammatory stress response and releases cytokines. The release of cytokines can allow other toxins to pass through the BBB to the brain that would not usually gain access (Evens and Eschiti, 2009).

Patients often experience anxiety and fear because of these cognitive impairments. Some cognitive-linguistic assessments are not sensitive enough to detect subtle cognitive changes from chemotherapy treatment. The Functional Assessment of Cancer Therapy-Cognitive (FACT-Cog) was developed as a self-reported scale to evaluate the following: mental acuity, attention, concentration, memory, verbal fluency, functional interference, changes in previous functions, impact on quality of life, and deficits observed by others (Rugo and Ahles, 2003; Tannock et al, 2004). A speech language pathologist may use this resource during the evaluation to identify areas of impairment and measure future progress with cognitive abilities by using compensatory strategies.

SYMPTOMS OF CHEMOTHERAPY-INDUCED COGNITIVE IMPAIRMENT OR “CHEMO BRAIN”

- Deficits in attention (concentration, multitasking, and easily distracted)
- Mental fatigue/mental cloudiness
- Slower thinking or processing speed
- Disorientation
- Deficits with comprehension or understanding
- Difficulties with memory (recognizing familiar objects, recalling details, names, and dates)
- Difficulties with problem solving and reasoning
- Disorganized and trouble with planning
- Impairments with working memory
- Deficits with verbal or visual memory
- Reduced reaction time and motor speed
- Disturbances with gait and dexterity
- Behavioral changes and socially inappropriate behavior