Chapter 12
Neuropsychological Manifestations Associated With Cancer Chemotherapy

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ABSTRACT

In recent years, we have seen a significant increase in the incidence and prevalence of oncological diseases. With the evolution of treatments and the tendency to increase the life expectancy of cancer patients, it is necessary to consider even more: not only survival but also the quality of life in this period, with the individual being able to maintain their family, social, and labor activities. An important and often neglected cause of impact on quality of life, functionality, and work capacity is cancer-related cognitive impairment, which arises from several etiologies, with chemotherapy being one of the most common. This chapter reviews the literature on cognitive dysfunction associated with chemotherapy and how to evaluate and clinically manage patients with this important complication, providing a clear and didactic text on the topic for health professionals who deal with cancer patients in their clinical practice or who are interested in studying and researching the theme.

1. INTRODUCTION

In recent years, we have seen a process of demographic transition in the world, with a decrease in birth and mortality rates, leading to an aging population. Likewise, a process of epidemiological transition is taking place, with the replacement of communicable diseases by non-communicable diseases and external causes. These changes have generated a shift in the burden of morbidity and mortality from younger groups to older groups and a transformation from a situation in which mortality predominates to one in which morbidity is dominant. As a result, both the incidence and prevalence of oncological diseases have increased, producing a significant increase in the years lived with disability due to these pathologies, an increase estimated at 40.6% between 2007 and 2017 (James et al., 2018; McCracken & Phillips, 2017).

With the evolution of treatments and the tendency to increase the life expectancy of cancer patients, it is necessary to consider even more not only survival but also the quality of life in this period, with the individual being able to maintain their family, social, and labor activities. An important cause of impact on quality of life, functionality, and work capacity is cancer-related cognitive impairment, which arises from several etiologies, often combined in the same patient: direct effects of cancer (which can occur even in neoplasms outside the central nervous system), effects of comorbidities (such as fatigue, depression, anxiety, insomnia, and pain) and direct effects of cancer treatment; the latter group is divided into the effects of chemotherapy, brain radiotherapy, immunotherapy and hormone therapy (Pendergrass et al., 2018). It is estimated that up to 30% of cancer patients have cognitive changes before treatment, up to 75% have measurable impairment during treatment, and around 35% of cancer survivors will continue to exhibit cognitive changes in the months to years following cancer treatment (Janelsins et al., 2014).

The period in which the highest percentage of cancer patients are affected by cognitive dysfunction is during treatment, with a large part of the cases being directly related to chemotherapy, the subject that we will cover in greater detail in this chapter.

2. CONCEPTS AND EPIDEMIOLOGY

It is already well documented that patients undergoing chemotherapy can suffer cognitive changes, which can be subjective (when there is only the patient's complaint without dysfunction proven by tests) and objective (with documentation of impairment by cognitive tests), mainly in short term memory, attention, executive functions, and processing speed (Ahles et al., 2012; Fleming et al., 2023; Joly et al., 2015; Lange et al., 2019; Pendergrass et al., 2018). In the literature, these changes were called chemotherapy-related cognitive impairment, or colloquially "chemobrain."

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