GRAPHOLOGICAL ANALYSIS: A POTENTIAL PSYCHODIAGNOSTIC INVESTIGATIVE METHOD FOR NEUROTOXICITY DETECTION OF CHEMOTHERAPY IN CANCER PATIENTS

Major Gheorghe Giurgiu[1], Prof Dr Med Manole Cojocaru[2], SciRes I, EuSpLM

[1]Deniplant-Aide Sante Medical Center, Biomedicine, Bucharest, Romania
deniplant@gmail.com; Telephone: +40744827881
https://orcid.org/0000-0002-5449-2712

[2]Titu Maiorescu University, Faculty of Medicine, Bucharest, Romania
cojocaru.manole@gmail.com; Telephone: +40723326663
https://orcid.org/0000-0002-6871-577X

Roughly 60% of patients undergoing chemotherapy have some associated neurotoxicity.

Early detection and intervention are vital.

Neurotoxicity associated with chemotherapy is recognized more often today than ever before.

It's estimated that 60% of patients receiving neurotoxic chemotherapeutic agents have some degree of associated neurotoxicity.

Neurotoxicity affects the patient not only physically, but also functionally, psychosocially, and spiritually, and in turn can affect the family as well.

Chemotherapy-induced neurotoxicity is a significant complication in the successful treatment of many cancers.

Damage to the nervous system may result from the direct or indirect effects of neurotoxic chemotherapeutic agents on the central nervous system, peripheral nervous system, cranial nerves, or a combination of these.

Neurotoxicities are usually temporary and resolve when the treatment is stopped.

But some are permanent and have lifelong implications for a patient's quality of life.

The incidence of chemotherapy-induced neurotoxicity appears critically related to cumulative dose and infusion duration, while individual risk factors may also influence the development and severity of neurotoxicity.

Chemotherapy may have detrimental effects on either the central or peripheral nervous system.

Patients report problems with memory retrieval, learning, and concentration, which may persist after treatment has finished or never fully resolve.

Neurological side effects are a common complication following chemotherapy, and can adversely affect clinical management of the cancer patient.

The overall incidence of these toxicities is unknown, but they are becoming more common.

Additionally, as more patients survive long term, late neurological side effects are becoming increasingly recognized, such as impaired cognitive function.

Cancer patients have frequently recognized decreased cognitive function ("chemo-brain") during chemotherapy, which, in the past, was attributed by their physicians to stress or depression.

Cross-sectional studies also suggest persistent cognitive dysfunction in 20% to 30% of patients 2 to 10 years posttreatment.

Mechanisms for this functional decline are not fully understood.

Neurotoxicity refers to the direct or indirect effect of chemicals that disrupt the nervous system of humans or animals.

Neurotoxicity is usually self-limiting after exposure ceases and rarely progressive in the absence of continued exposure, although there may be a significant delay between exposure and manifestation of neurotoxic effects.

Neurological side effects are a common complication following chemotherapy and can adversely affect clinical management of the cancer patient.

Cancer patients during chemotherapy report problems with memory retrieval, learning, and concentration, which may persist after treatment has finished or never fully resolve.

Peripheral neuropathies are the most common neurological complications in patients receiving chemotherapy, especially with regimens containing taxanes, platinum, and vinca alkaloids.

A thorough neurologic assessment during the first visit and subsequent visits will ensure quick identification of chemotherapy-induced neurotoxicities.

The clinician should assess for changes in mental status and vision, ability to walk, hallucinations, numbness and tingling in extremities, constipation, urinary retention, hearing loss, myalgia, arthralgia, weakness, hemiparesis, and hemiplegia.

Nurses play an important role in the early detection of and intervention for neurotoxicity, the success of treatment, and the patient's quality of life both during and after treatment.

Neurotoxicity is a potentially devastating complication.

Neurotoxicity may manifest in a variety of ways, including impaired cognition, ataxia, and incontinence, and is often associated with a significant decline in the quality of life.

In fact, chemotherapy alone has been associated with improvement or stabilization of cognitive function in several studies, and more than half of the patients treated only with chemotherapy in two prospective studies had normal cognitive function on follow-up neuropsychological testing

Neurotoxicity is a frequent and dose-limiting side effect of chemotherapy, and apart from dose reduction or discontinuing the drugs implicated in the development of neurotoxicity, there is very little in the way of specific pharmacological management to reverse their side effects.

There is no effective therapy once neurotoxicity develops, and patients diagnosed with this condition often die of neurotoxicity-related complications in the absence of recurrent or active lymphoma.

Cytostatic agents that are known for their potential to induce central neurotoxic adverse effects are outlined in numerous reviews.

Chemotherapy-induced neurotoxicity is difficult to prevent and treat.

Nurses can educate patients and families regarding the neurotoxic effects of chemotherapy and their implications for patient safety.

Therefore, a major aim of clinical research is to standardize CIPN assessment.

A second major aim in clinical research is to maintain a high level of attention to the possible neurotoxicity of drugs more recently introduced into clinical practice.

Preclinical studies are of pivotal importance to identify druggable targets for pharmacological intervention in order to prevent or limit CIPN.

Another essential question is whether those cancer patients, who already have cognitive deficits at the time of cancer diagnosis, are more prone to developing further cognitive impairment during cancer treatment than patients who do not demonstrate cognitive deficits at baseline.

Chemotherapy-induced peripheral neuropathy (CIPN) is a common dose-limiting side effect experienced by patients receiving treatment for cancer.

Excellent nursing assessment and identification of chemotherapy-induced neurotoxicity are paramount to early intervention and positive outcomes for cancer survivors.

To what extent both factors contribute to the development of cognitive deficits in cancer patients, still needs to be determined.

The development of cognitive impairment and cancer may share common risk factors.

Therefore, nurses also need to consider how the sequelae of treatment may affect the survivor's quality of life.

When two or more neurotoxic agents are used in combination therapy, the neurotoxicity is likely to become more profound.

Factors that put patients at higher risk for neurotoxicity include high-dose therapy, diabetes mellitus, alcohol abuse, and previous or concurrent use of other neurotoxic drugs.

In conclusion, some data suggest that cognitive deficits are more likely to be associated with a cancer diagnosis in general than with a systemic treatment.

Conclusion

In severe cases of chemotherapy manifests, the dose of chemotherapy is reduced, the administration delayed, or the treatment discontinued.

It's important for nurses to know which chemotherapeutic agents cause neurotoxicity.

The patient and family need to be educated about possible side effects of chemotherapeutic agents and symptoms of neurotoxicity at the beginning of treatment

By reporting symptoms to their health care providers, patients can assist in the early detection, assessment, and treatment of their conditions.

References

Taillibert S, Le Rhun E, Chamberlain MC Chemotherapy-Related Neurotoxicity. Curr Neurol Neurosci Rep. 2016; 16(9): 81

Scatchard K, Lee SM Neurotoxicity of Chemotherapy. Blue Books of Neurology. 2010; 36: 352-371

Staff NP, Grisold A, Grisold W, Windebank AJ Chemotherapy-induced peripheral neuropathy: A current review. Ann Neurol. 2017; 81(6): 772-781.

Froklage FEAM, Reijneveld JC, Heimans JJ Central Neurotoxicity in Cancer Chemotherapy. Pharmacogenetic Insights. Pharmacogenomics. 2011; 12(3): 1-17.

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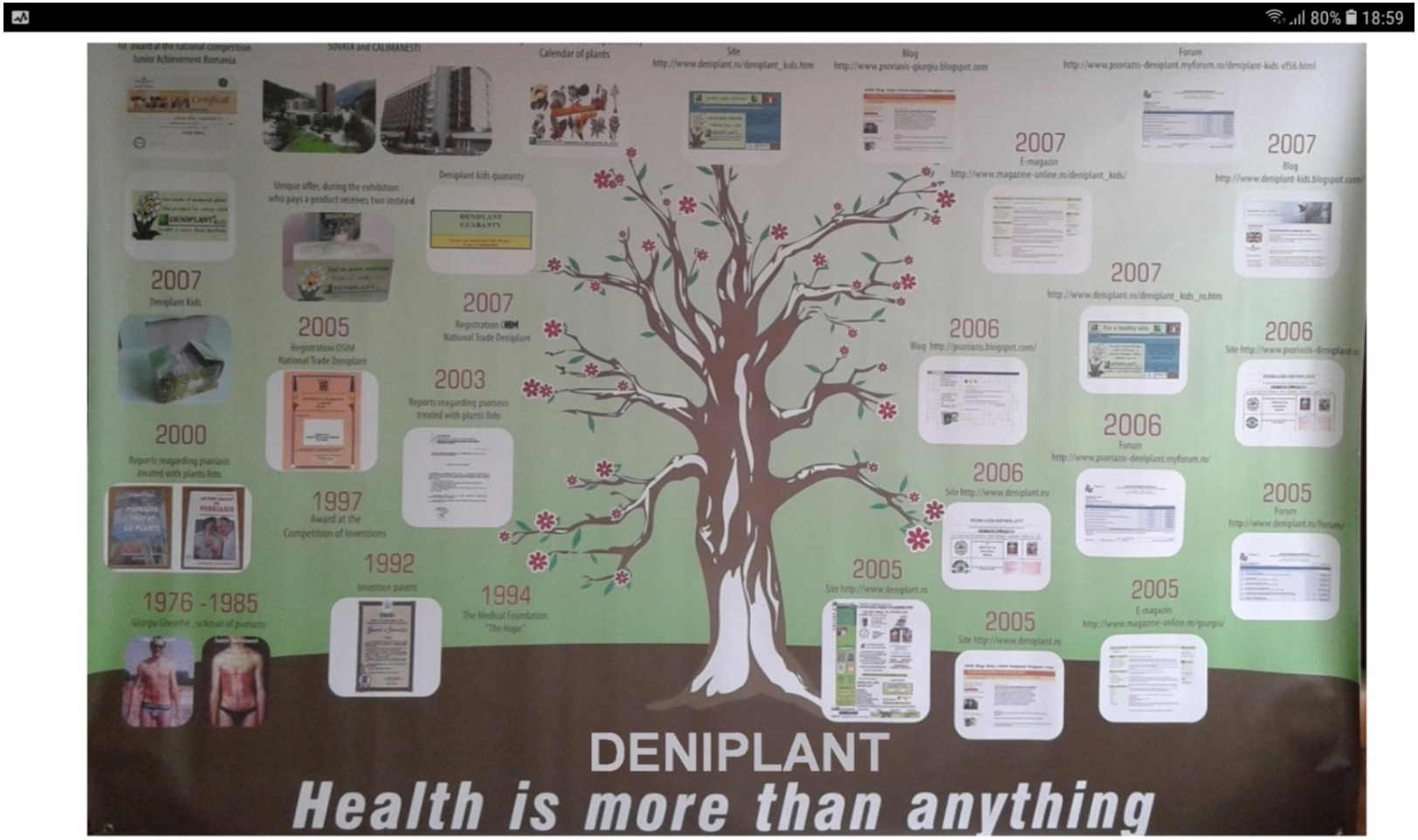

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