

Cognitive functioning during long-term tamoxifen treatment in postmenopausal women with breast cancer

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Abstract

Objective: Endocrine therapy is widely used—often for many years—in women with breast cancer. Yet little is known about cognitive functioning after long-term use of tamoxifen. We examine cognitive sequelae, approximately 3 years after diagnosis, in postmenopausal women with breast cancer who were treated with adjuvant tamoxifen.

Methods: Data from participants who underwent surgical operation with or without radiotherapy, participants who received adjuvant tamoxifen, and healthy controls were collected. Neuropsychological tests were administered, and participants completed questionnaires on health-related quality of life (Quality of Life Questionnaire Core 30 and Breast Cancer–Specific Quality-of-Life Questionnaire), menopausal symptoms (Functional Assessment of Cancer Therapy—Breast endocrine symptom subscale), and anxiety and depression (Hopkins Symptom Checklist).

Results: In total, 107 women participated (adjuvant tamoxifen group, $n = 20$; surgical operation/radiotherapy group, $n = 43$; healthy control group, $n = 44$). Women in the adjuvant tamoxifen group had received tamoxifen for a mean (SD) of 31.5 (18.6) months (range, 15–79 mo) and performed worse on verbal memory than the surgical operation/radiotherapy group ($P < 0.05$) and the healthy control group ($P < 0.05$). Participants in the adjuvant tamoxifen group performed worse on measures of fluency than healthy controls ($P < 0.05$). Furthermore, women in the adjuvant tamoxifen group reported worse cognitive functioning ($P < 0.05$) than women in the surgical operation/radiotherapy group or the healthy control group.

Conclusions: Our results provide insights into cognitive functioning in women who receive long-term adjuvant tamoxifen treatment. By adding the surgical operation/radiotherapy group, we could control for the mental and physical influences of the diagnosis and treatment of breast cancer. Cognitive domains that rely on verbal abilities (verbal memory and fluency) seem to be at risk for deterioration after treatment with tamoxifen.

Key Words: Tamoxifen – Cognition – Postmenopausal – Breast cancer.

With increased survival, cognitive functioning after breast cancer therapy becomes of greater importance to the well-being of women. In postmenopausal women, approximately 75% of breast tumors are hormone-sensitive.¹ In this group of women, endocrine therapy is widely used and often prescribed for many years.

Endocrine therapy aims to inhibit the growth of estrogen receptor (ER)-positive tumors by inhibiting or blocking estrogen. This can be achieved by administering either selective ER modulators (SERMs), which allow selective inhibition or stimulation of estrogen-like action in various tissues, or aromatase

inhibitors (AIs), which block the synthesis of estrogen, thus lowering estrogen levels. These endocrine therapies may be provided in a switch schedule (initially SERMs for a number of years followed by an AI up to a total of 5–7 y of endocrine therapy).^{2,3} Common adverse effects of endocrine therapy, such as hot flashes and mood disturbances, are related to estrogen deprivation.⁴ Increasing evidence suggests that estrogens play a role in cognitive functioning.⁵ Although the mechanisms of action of estrogens on the brain are not entirely understood, neuroscientific studies indicate that estrogens exert neurotrophic and neuroprotective actions.⁶ Estrogens seem to favor differentiation and survival by acting through ERs,⁷ but estrogens also act through membrane receptors to influence the functioning of the brain.⁸ These ERs are present in structures that are important for cognitive functioning, such as the frontal lobe and the hippocampus.⁹ Therefore, it is biologically plausible that endocrine therapy could affect cognitive functioning. Moreover, because estrogen is known to interact with the cholinergic system,¹⁰ it seems probable that cognitive functions such as attention, verbal learning, and memory may be particularly vulnerable.

Although much is already known about the cognitive effects of chemotherapy,¹¹ many women with breast cancer receive

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Long Term Tamoxifen Treatment For Breast Cancer

Virgil Craig Jordan



Long Term Tamoxifen Treatment For Breast Cancer:

Long-term Tamoxifen Treatment for Breast Cancer Virgil Craig Jordan, 1994 During the past twenty years tamoxifen has become the most widely prescribed and most successful drug used in the treatment of breast cancer In this volume editor V Craig Jordan provides articles that trace the development pharmacology and clinical research surrounding this drug which by the year 2000 could be used to treat as many as one million women annually Drawing from research conducted by specialists in the United States the United Kingdom and Italy the series of articles describes the clinical testing of tamoxifen highlighting the benefits Studies show that tamoxifen lowers cholesterol and can potentially protect women against osteoporosis and fatal coronary heart disease Equally important is a discussion of side effects and possible drug interactions and how these issues relate to patient concerns An investigation of the development of a new class of drugs for use after tamoxifen fails provides valuable insight into future treatments as the contributors consider possible resistance to tamoxifen This volume provides invaluable information for physicians and surgeons who care for patients with breast cancer and for women interested in exploring this therapeutic dimension **Tamoxifen and Breast Cancer** Michael W. DeGregorio, Valerie J. Wiebe, 1999-01-01 A discussion of the diagnosis of breast cancer and the risks benefits and limitations of treatment alternatives particularly tamoxifen This edition contains information on developments in the use of tamoxifen especially in the results of the Breast Cancer Prevention Trial

Treatment of the Postmenopausal Woman Rogerio A. Lobo, 2007-06-05 For anyone who treats postmenopausal women this latest edition of Rogerio Lobo s classic work combines the best from two well known references Menopause and the second edition of Treatment of the Postmenopausal Woman By adding significant discussions of the basic science behind menopause it is possible to objectively assess the clinical value and limitations of current approaches to treatment and provide a basis and rationale for strategies that will result in better individualized and specialized care Not only does the third edition discuss diagnosis and treatment of menopause but it covers biological anatomical physiological pathobiological and pharmacological aspects as well bringing together in one source all of the information needed to understand and treat postmenopausal conditions Over 50% new material representing the vast amount of information available since the Women s Health Initiative WHI clinical trials were completed making this the most up to date reference on postmenopausal women Includes several new sections on comparisons between clinical trials and observational data urology and pelvic support Each section is preceded by a preface to put the area into context with many chapters having suggested treatment regimens Biological and Hormonal Therapies of Cancer Kenneth A. Foon, Hyman B. Muss, 1998-01-31 This volume Biological and Hormonal Therapies of Cancer which is part of the series Cancer Treatment and Research presents selected new information concerning biologic and hormonal therapy of cancer We have attempted to provide the reader with topics of major interest in a timely fashion There is renewed interest in biologic therapy of cancer Two chapters review the role of interferon in the hematologic malignancies and in solid tumors Vaccine

therapies have come to the forefront of cancer therapy recently and two chapters approach different strategies of vaccine therapies one reviews the cellular vaccine therapies and another the anti idotype approach The hormonal therapy chapters focus on current uses of endocrine therapy in endometrial breast and prostate cancer In addition hormonal strategies for the prevention of breast cancer and endometrial cancer including exciting information relating to phytochemicals are presented The effects of tamoxifen on endometrium is a topic of major interest and is discussed in detail Finally there is a chapter on estrogen receptor expression and regulation in human breast cancer These chapters are all written by experts in the field and contain timely and relevant information of interest to laboratory and clinical scientists and practitioners alike Biologic and endocrine therapies represent major areas of cancer research interest The advent of newer biologic therapies including new antibody targeted treatments and the use of biologics as tumor modulators to enhance the effects of other treatment regimens is an exploding avenue of research

Tamoxifen Tales V. Craig Jordan, 2022-01-12 *Tamoxifen Tales* Suggestions for Scientific Survival presents a case study describing the academic journey of teams behind major advances in medical sciences highlighting lessons learned that are applicable to the next generation of scientists This book provides a manual on the successful mentoring of young scientists including stories describing how training experience shaped careers to become leaders in academia and the pharmaceutical industry The book documents Professor V Craig Jordan's 50 year career in medical sciences that led to the discovery and development of Selective Estrogen Receptor Modulators SERMs which became the standard of women's healthcare around the world Additionally it illustrates the versatility of a scientist with a commitment to serving societies This important resource will be a useful and interesting book for established medical scientists research mentors and advanced students wanting to chart a successful and impactful research career Highlights lessons learned from the journey behind discovery science that are applicable to the scientific journey of the next generation of scientists Provides a manual on the successful mentoring of young scientists to become leaders in academia and the pharmaceutical industry Examines cancer treatment based on a personal determination to challenge at the frontiers of the science and to relate to personal life experience Includes references for further research reading

Journal of the National Cancer Institute, 1990

Drug Therapy in Nursing Diane S. Aschenbrenner, Samantha J. Venable, 2009 This text presents a totally nursing focused framework for teaching and learning nursing pharmacology and places the patient at the center of all drug administration decisions and considerations The book presents core drug knowledge using prototypes of different drug classes and emphasizes core patient variables that influence the patient's response to therapy This thoroughly updated Third Edition covers newly approved drugs has separate chapters on drugs affecting fungal and viral infections and includes more pathophysiology information FDA Black Box warnings have been added to the discussion of each prototype when applicable and safety alerts have been added to emphasize prevention of common medication errors A companion Website offers student and instructor ancillaries including NCLEX style questions pathophysiology animations medication

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Clinical Ocular Toxicology E-Book Frederick T. Fraunfelder,Frederick W. Fraunfelder,Wiley A. Chambers,2008-06-12

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