Objective

The objective of this poster is to determine if there is a difference in the number of women faced with breast cancer based on a prior or current dosage of a selective serotonin reuptake inhibitor. The research focuses on the effects of SSRIs on a chemical level as well as possible bias in previous studies.

Materials and Methods

A eight year study based in Denmark analyzed strata from two different groups of women: (1) estrogen-receptor positive (ERP+) and treated with tamoxifen for one or more years without recurrence (TAM+) and (2) estrogen-receptor negative (ERP-), not treated with tamoxifen (TAM-), and recurrence-free for at least one year. The controls did not have a recurrence, while the cases did. When the samples were obtained, all of the women ranged from 35 to 69 years of age, and were further stratified based on menopausal status, date of surgery, county of origin when diagnosed, and stage of diagnosis. Logistic regression allowed for evaluation of the impact of the specific SSRI, dosage, and duration on the risk of breast cancer.

Results

The results of this study suggested that citalopram, an SSRI antidepressant, depicts no significant increase in breast cancer recurrence. The adjusted odds ratio of tamoxifen patients was 1.1 for citalopram and 0.9 for other SSRIs, suggesting no relationship between the antidepressants and recurrence. However, an adjusted odds ratio was used for possible confounding, which deflated the SSRI and Taxifemone crude odds ratio by 0.1. In addition, this study was conducted in part at the Center for Registry Research, which is funded by the manufacturer of citalopram, H. Lundbeck A/S. Such an association may introduce bias. Reading deeper into the literature revealed that this study was funded in order to allow the SSRI citalopram to meet the US National Comprehensive Cancer Network’s treatment guidelines.

Conclusion

The studies conducted thus far have proved inconclusive. Many breast cancer patients are given SSRIs for menopausal symptoms, migraine headaches, or depression before or as a result of their treatment. It is important to spread awareness about the long-term effects of antidepressants so that women can make empowered decisions about the course of their treatment. Patients should always be open with their doctors about family histories of cancer as well as their personal case history. In return, doctors and journals should be transparent about the side effects of prescribed medications. Long term studies with larger cohorts of women with and without predispositions to breast cancer should be conducted. In the short term, antidepressants, such as venlafaxine (Effexor), with literature to support a decreased association with breast cancer and compromise of Tamoxifen, should be prescribed for those with a medical or family history of breast cancer.

Applications to Biotechnology

Several advances in the field of biotechnology made these results possible. Tamoxifen is an example of a new development in science that has allowed for the survival of many breast cancer patients. The Human Genome Project has also greatly increased scientific understanding in a wide variety of areas. Because the Danish study was conducted between the years 1994 and 2001, the human genome was not yet decoded, and, therefore, the study could not account for a predisposition to breast cancer on the basis of a gene mutation. Future studies should be mindful of this advancement and use the new technology to see the relationship between SSRI and both pre- and non-disposed patients. Biotechnology can be further used to create less potent antidepressants that do not interfere with anti-cancer drugs.

Acknowledgements

I extend my sincere thanks to Dr. Senegar-Mitchell, Dr. Chang, Dr. Saunders, Dr. Su, Mrs. Winter, and all of my OSA sisters for sharing their time, knowledge, and collaboration over the course of the Oncofertility Science Academy. I would also like to acknowledge the authors of the referenced studies for their commitment to improving patient care.

References