Original Article

Effect of a Nausea Expectancy Manipulation on Chemotherapy-Induced Nausea: A University of Rochester Cancer Center Community Clinical Oncology Program Study

Abhay R. Shelke, MD, Joseph A. Roscoe, PhD, Gary R. Morrow, PhD, MS, Lauren K. Colman, MD, Tarit K. Banerjee, MD, and Jeffrey J. Kirshner, MD
University of Rochester, James P. Wilmot Cancer (A.R.S., J.A.R., G.R.M.), Rochester, New York; Northwest Community Clinical Oncology Program (L.K.C.), Tacoma, Washington; Marshfield Clinic Research Foundation Community Clinical Oncology Program (T.K.B.), Marshfield, Wisconsin; and Hematology-Oncology Associates of Central NY (J.J.K.), Syracuse, New York, USA

Abstract

Several studies have shown that patients' expectancies for the development of nausea following chemotherapy are robust predictors of that treatment-related side effect, and some studies have shown that interventions designed to influence expectancies can affect patients' reports of symptoms. In this randomized, multicenter, Community Clinical Oncology Program trial, we investigated the effect of an expectancy manipulation designed to reduce nausea expectancy on chemotherapy-induced nausea in 358 patients scheduled to receive chemotherapy treatment. Patients in the intervention arm received general cancer-related educational material plus specific information about the efficacy of ondansetron, specifically designed to diminish nausea expectancy. Patients in the control arm received only the general cancer-related educational material. Nausea expectancy was assessed both prior to and following the educational intervention. We observed a significant reduction in nausea expectancy in the intervention group ($P = 0.024$) as compared to the control group ($P = 0.34$). In the intervention group, patients' expectations of nausea assessed prior to the intervention correlated significantly with average nausea ($r = 0.27$, $P = 0.001$), whereas nausea expectancy assessed following the intervention did not ($r = 0.1$, $P = 0.22$). Although the expectancy manipulation reduced patients' reported expectations for the development of nausea, the occurrence of nausea was not reduced. Furthermore, post-intervention nausea expectancy compared to pre-intervention expectancy was less predictive of subsequent nausea. Explanations for these findings include the possibility that the expectancy manipulation was not strong enough, and the possibility that changing nausea expectancies does not change occurrence of nausea. J Pain Symptom Manage

This study was supported by Grant U10CA 37420 from the National Cancer Institute.

Address correspondence to: Abhay R. Shelke, MD, University of Rochester Cancer Center, 601 Elmwood Avenue, Box 704, Rochester, NY 14642, USA. E-mail: drabhay309@yahoo.co.in

Accepted for publication: May 25, 2007.

0885-3924/08/$—see front matter
doi:10.1016/j.jpainsymman.2007.05.008

2008;35:381–387.

Key Words
Expectations, nausea severity, chemotherapy, response expectancy

Introduction

Nausea and vomiting (NV) continue to be troublesome and common side effects of many chemotherapy regimens.[1–5] Although the occurrence and severity of chemotherapy-induced NV derive largely from the emetogenic potential of the chemotherapeutic drugs, individual patient characteristics, such as younger age,[6] female gender,[7] previous experience of pregnancy-related nausea,[6,8] and a history of motion sickness,[9] play a role. Even taking all these factors into account, there is a great deal of variability both across and within specific chemotherapy regimens with respect to the occurrence and severity of NV. This unexplained variation in NV might reflect differences in multiple factors, including: the prescription and usage of antiemetic agents,[10] psychological factors such as infusion-related state anxiety, behavioral conditioning, and general "psychological stress."[9,11] Patients' beliefs and expectations about whether they will experience NV from chemotherapy have also been demonstrated to be strong and independent predictors of chemotherapy-related NV.[9,12–16]

In our previous studies, we found a significant relationship between patients' pretreatment expectations for nausea development and their mean postchemotherapy nausea severity.[15] We also observed that pretreatment expectations of experiencing chemotherapy-induced nausea make a significant contribution to the development of anticipatory nausea.[17] Recently, we reported that expectancy of nausea assessed in 194 female breast cancer patients before they received their first doxorubicin-based chemotherapy cycle was a strong predictor of subsequent nausea severity, and, in fact, was a stronger predictor than previously reported predictive factors, such as age, nausea during pregnancy, and susceptibility to motion sickness. In that study, expectation of developing nausea as a result of treatment was assessed before treatment by the question: "Before you spoke to your doctor about possible side effects of chemotherapy, what did you think the chances were that you would have severe nausea from your treatments?" The possible responses were "very unlikely," "unlikely," "about even chance," "likely," and "very likely." Patients who believed it was "very likely" that they would experience severe nausea from chemotherapy were five times more likely to have severe nausea than fellow patients who thought its occurrence would be "very unlikely."[16]

Several hypotheses have been offered to explain the relationship between symptom expectancies and subsequent report of symptoms. The simplest explanation is that the predictive capacity of expectancies derives from the patient's prior experience with factors that cause the symptom. For example, by the time most people reach adulthood, they have a fairly good idea of how susceptible they are to nausea and what circumstances are likely to cause it. Cognitive schemas[18] may also be involved in that expectations of symptoms may exacerbate their intensity and frequency because for an individual expecting a symptom, such as nausea, an otherwise ambiguous physiological sensation, such as stomach rumbling, is more likely to be interpreted as nausea than when nausea is not expected. Another possible factor involves what might be called a "self-fulfilling prophecy" or "nocebo" effect. Self-fulfilling prophecy is a phenomenon by which belief that a future event will occur contributes to that event actually occurring. It plays a powerful role in shaping experiences, and, to the extent that it exists, is causal rather than merely predictive.[19] As suggested by Kirsch, such beliefs about what is going to happen, termed "response expectancies," can have a direct and unmediated effect on health outcomes.[20] According to this theory, response expectancies for nonvolitional outcomes, such