Using a Simple Diary for Management of Nausea and Vomiting During Chemotherapy

Problem identification

Nausea and vomiting (N&V) are frequent complications following chemotherapy, even when taking 5-HT3 or neurokinin-1 antagonists (Kris et al., 2006). The rate of N&V is higher in females, especially in those who received chemotherapy prior, had experience with motion sickness, had N&V during pregnancy, or knew other people personally who had received chemotherapy (Dando & Perry, 2004; Warr, Street, & Carides, 2010). Literature has documented the physical and emotional effects of chemotherapy induced N&V (Dando & Perry, 2004; Kris, et al., 2005). Therefore, oncology units place great emphasis on prevention of post chemotherapy N&V.

We introduced an innovative technique where patients used a self-reporting N&V diary following chemotherapy with the desire to improve their N&V. We developed very simple diary to monitor patients' N&V and to establish additional ways for patients to express their fears and anxieties in their own language. Our main objective was to evaluate the effectiveness of a self-reporting N&V diary as a tool to ensure effective communication with patients and to become involved in the patient's treatment process and antiemetic therapy adjustment. An additional aim was to evaluate the association between N&V during pregnancy and chemotherapy induced N&V. Previously only Hermansen-Kobulnicky and colleagues (2004) in a randomized pretest-posttest experimental study of 74 patients who were beginning chemotherapy evaluated adverse effects using the Write Track personal health tracker.

Finding the Evidence

All new female patients with operable breast cancer (post-surgery) who were treated in oncology unit with adjuvant chemotherapy (N=47) containing Doxorubicin (Adriamycin) were

assigned to participate in the study. The participants were approximately 57 years old (age range 36-78) and had on average 2 children (range 0-8). All participants were chemotherapy naive and most received intravenous chemotherapy of the similar regimen for the treatment of their breast cancer. The Specialized Oncology Unit of The Barzilai Medical Center, Ashqelon, Israel, provides medical services reaching a population of 500,000 consisting of a high proportion of immigrants, with a wide variety of languages, cultural backgrounds, social and financial conditions, mostly immigrants from the former USSR. Given this diversity, innovative approaches are required to assure excellence of care. Oncology unit services include follow-up visits, chemotherapy treatments, pain evaluation and care, supportive and palliative care, psychosocial support, and nutritional evaluation.

Prior to initiating treatment, patients were asked to detail N&V during their pregnancies or any other experiences with N&V. Prior to the first treatment, each patient received a 7-day post-chemotherapy blank diary. This diary was developed to answer the need for feedback about N&V from the patient, especially those who didn't speak Hebrew. Each day the patient scored her N&V using a four-graded Likert type scale for nausea (1-no nausea to 4-severe nausea) and a similar four-grade scale for vomiting (1 – no vomiting to 4 – severe vomiting).

At subsequent visits, the health care team (oncology nurse and physician) assessed the number of vomiting episodes since the last visit and the higher daily scores of the nausea and vomiting using the following categories: Weak: Grade 1 and 2 ratings of nausea or vomiting; Moderate: Nausea or vomiting rated as grade 3; Severe: Nausea or vomiting rates as grade 4. Following the assessment when warranted, the physician made adjustments to the patients' antiemetic treatment. Other patient symptoms such as fatigue, pain, bad mood (depression), and loneliness which were assessed by the diary were discussed with the patient and relevant support

and reassurance was given by an oncology nurse, physician, dietitian or a social worker. Each patient thus received individual attention. Patients continued to fill out a self-reporting diary following each chemotherapy session, allowing for the health care team to provide constant evaluation, constructive care, and communication for the patient. Routinely, patients were advised to start antiemetic treatment 30 minutes prior to chemotherapy. During treatment patients received intravenous doses of 5-HT3 receptor antagonists and dexamethasone. For two consecutive days after chemotherapy, the patient received a 5-HT3 receptor antagonist and when warranted, a dopaminergic antagonists.

At the visit seven days after the chemotherapy was delivered, the patient's self-report diary was evaluated and translated (if necessary) by the nurse and oncologist for assessment of efficiency of antiemetic treatment. Thus, antiemetic treatment was adjusted according to the patients' report in the diary. Schedule and doses of antiemetic drug are presented in Table 1. If the N&V were graded as weak, the treatment remained unchanged or an option of Lorazepam tablets (1 mg) one hour prior to bedtime was advised. If the N&V score was moderate, the patient was prescribed Lorazepam and Dexamethason. If the N&V score was severe, the patient was prescribed a Neurokinin-1 antagonist (Aprepitant) tablet (125mg), one hour before chemotherapy and then 80 mg for the next two days. Two-day regimens included Neurokinin-1 antagonist (Aprepitant) tablet (125 mg) upfront for highly emetic chemotherapy protocols. Because at the time of this trial Aprepitant was not included in list of drugs subsidized by Israel healthcare state system (drug basket), our patients received it only as a rescue medication for N&V. Today, Aprepitant is an integrative part of the antiemetic protocol in oncology for prophylaxis of nausea and vomiting during highly emetic chemotherapy (Kris, et al., 2005).

Results: Among women, who experienced moderate N&V during their first treatment, 75% experienced no N&V during the second treatment but 25% still experienced moderate N&V (Table 2). Among three individuals who experienced severe N&V after the first treatment, one continued to experience severe N&V after the second treatment, and two experienced no N&V. This decreased frequency and severity of N&V suggests that the patient using a self-reported diary was probably effective in improving of antiemetic treatment in chemotherapy patients.

Among the women who had no experience with N&V during pregnancy, 67% did not experience N&V after the first course of chemotherapy, 33% experienced moderate to severe N&V (Table 3). However, among women who did experience N&V during pregnancy, 55% experienced moderate to severe N&V after the first course of chemotherapy and only 44% experienced no N&V.

Discussion & Conclusion

In this study, antiemetic therapy was successful even after the first treatment where 57% of patients in the study did not experience any N&V. Based on our experience, antiemetic therapy adjustments based on information received from a simple self-reporting N&V diary were also effective. The number of patients complaining of delayed N&V declined to 4-11%, much lower than reported in other studies (Grunberg, et al., 2004). These results are in accord with outcomes of one previous study (Hermansen-Kobulnicky, et al., 2004) that also found the patients' self-documented symptoms and adverse effects can be valuable data when used to help tailor medication regimens to improve clinical status while satisfying patients' personal priorities.

The use of a simple diary in our study allowed the clinical staff to make adjustment to patients antiemetic therapy and this involvement gave the staff have a the sense of caring (Grunberg, et al., 2004). Taking into account the relatively small sample size of our study, we

can cautiously conclude that using the self-reporting N&V diary along with antiemetic therapy facilitates achieving a high degree of control of N&V in the majority of patients.

Results of this study show a propensity (1.5 times higher) of women who experienced N&V during pregnancy are more likely to experience chemotherapy induced N&V. The knowledge on patients' N&V during pregnancy, motion N&V, past personal experience or exposure to N&V in others is of major importance for nurses and other clinical staff because it alerts to patients' potential N&V problem during chemotherapy.

We found that most patients responded favorably for the opportunity to express their fears and anxieties in diary format and were appreciative of the individual attention. Nurses reported that the introduction of a diary assisted them in better understanding their patients, to perceive patients' reactions and anticipate the development of possible problems. Using the self-reporting N&V diary strengthened the sense of security of the patients, as well as the trust between staff and patient, in addition to increasing the sensitivity of the staff to cultural differences in the approach to cancer and chemotherapy. Following the results of the pilot study our oncology unit has implemented the change of using the questionnaire to adjust the antiemetic treatment and to evaluate the patient's emotional status.

When patients use a self-reporting N&V diary it helps to achieve a better control on N&V in the majority of patients. Patients favorably responded for the opportunity to express their fears and anxieties and were appreciative of the individual attention. Using the self-reporting N&V diary strengthened the patients' sense of security and increased the sensitivity of the staff to cultural differences in the approach to cancer and chemotherapy.

References

Dando, T. M., & Perry, C. M. (2004). Aprepitant: a review of its use in the prevention of chemotherapy-induced nausea and vomiting. *Drugs, 64*(7), 777-794.

Grunberg, S. M., Deuson, R. R., Mavros, P., Geling, O., Hansen, M., Cruciani, G., et al. (2004). Incidence of chemotherapy-induced nausea and emesis after modern antiemetics. *Cancer, 100*(10), 2261-2268.

Hermansen-Kobulnicky, C. J., Wiederholt, J. B., & Chewning, B. (2004). Adverse effect monitoring: opportunity for patient care and pharmacy practice. *J Am Pharm Assoc (2003), 44*(1), 75-86; quiz 87-78.

Kris, M. G., Hesketh, P. J., Herrstedt, J., Rittenberg, C., Einhorn, L. H., Grunberg, S., et al. (2005). Consensus proposals for the prevention of acute and delayed vomiting and nausea following high-emetic-risk chemotherapy. *Support Care Cancer, 13*(2), 85-96.

Kris, M. G., Hesketh, P. J., Somerfield, M. R., Feyer, P., Clark-Snow, R., Koeller, J. M., et al. (2006). American Society of Clinical Oncology guideline for antiemetics in oncology: update 2006. *J Clin Oncol, 24*(18), 2932-2947.

Warr, D. G., Street, J. C., & Carides, A. D. (2010). Evaluation of risk factors predictive of nausea and vomiting with current standard-of-care antiemetic treatment: analysis of phase 3 trial of aprepitant in patients receiving adriamycin-cyclophosphamide-based chemotherapy. *Support Care Cancer, 19*, 1297-1302.

Table 1- Schedule and doses of antiemetic drugs.

Medical Agents		**Dose and schedule**						
		Pre-chemotherapy	**Post-chemotherapy** (Treatment days)					
Corticosteroids	Dexamethason	12-14 hours pre-treatment	1 (day of treatment)	2	3	4	5	6
		8 mg x 2 PO	8 mg x 1 IV	4 mg x 2 PO*	4 mg x 2 PO*	4 mg x 1 PO*	2 mg x 1 PO*	
5-HT3 receptor antagonists (one of the medicines)	Granisetron		3 mg x 1 IV	1 mg x 2 PO	1 mg x 2 PO			
	Ondansetron		8 mg x1 IV	8 mg x 2 PO	4 mg x 2 PO			
Dopaminergic antagonists	Metoclopramide					10 mg x 3 PO (PRN)	10 mg x 3 PO (PRN)	10 mg x 3 PO (PRN)
Anxiolytics	Lorazepam**	1mg x 1 two hours before bedtime / daily						

PO – per os, IV – intravenous, PRN – "pro re nata" – as needed.

* Patients with moderate to severe N&V.

** Patients with anxiety, insomnia, high emotional distress.

Table 2: Crosstabs of N&V experienced by patients after 1st vs. 2nd visit

		After 2nd visit			
		Light	**Moderate**	**Severe**	**Total**
After 1st visit	**Light**	27 (66%)	1 (20%)	0	28 (60 %)
	Moderate	12 (29%)	4 (80%)	0	16 (34 %)
	Severe	2 (5%)	0	1(2%)	3 (6 %)
Total		41 (87%)	5 (11%)	1 (2%)	47 (100%)

Table 3: Crosstabs of nausea/vomiting during pregnancy versus the 1st visit

		N&V at 1st visit			
		Light	**Moderate**	**Severe**	**Total**
N&V during pregnancy	**Unknown**	12 (12%)	8 (40%)	0 (0%)	20 (100%)
	No	12 (67%)	4 (22%)	2 (11%)	18 (100%)
	Yes	4 (44%)	4 (44%)	1 (11%)	9 (100%)