RESEARCH ARTICLE

Comparison of Psychotropic Prescriptions between Oncology and Cardiology Inpatients: Result from a Pharmacy Database in a Teaching Hospital in Malaysia

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Abstract

   Objective: To examine the prescription rates in cancer patients of three common psychotropic drugs: anxiolytic/hypnotic, antidepressant and antipsychotic. **Materials and Methods**: In this retrospective cohort study, data were extracted from the pharmacy database of University Malaya Medical Center (UMMC) responsible for dispensing records of patients stored in the pharmacy's Medication Management and Use System (Ascribe). We analyzed the use of psychotropics in patients from the oncology ward and cardiology from 2008 to 2012. Odds ratios (ORs) were adjusted for age, gender and ethnicity. **Results:** A total of 3,345 oncology patients and 8,980 cardiology patients were included. Oncology patients were significantly more often prescribed psychotropic drugs (adjusted OR: anxiolytic/hypnotic=5.55 (CI: 4.64-6.63); antidepressants=6.08 (CI: 4.83-7.64) and antipsychotics=5.41 (CI: 4.17-7.02). Non-Malay female cancer patients were at significantly higher risk of anxiolytic/hypnotic use. **Conclusions:** Psychotropic drugs prescription is common in cancer patients. Anxiolytic/hypnotic prescription rates are significantly higher in non-Malay female patients in Malaysia.

Keywords: Prescription - psychotropic - oncology - cardiology - Malaysia

Introduction

   The experiences of the cancer patients are variable and they may develop fear of recurrence, sense of vulnerability, sense of loss and alterations in their role and social support (Muzzin et al., 1994; Adler and Page, 2007; Sahin et al., 2013). Studies have shown that cancer patients can suffer from a variety of psychiatric disorders which include adjustment disorder, anxiety disorders and major depression where the prevalence rate can range from 7.5% to 44.5% depending on the type of cancer, the stage of the illness and study type (Cullivan et al., 1998; Grabsch eal., 2006; Wilson et al., 2007; Miovic and Block, 2007; Dastan and Buzlu, 2011; Maneeton et al., 2012; Zainal et al., 2013). Psychiatric co-morbidities not only complicate the cancer symptoms and treatment, but may also necessitate the use of various types of psychotropic medications to relieve the cancer patients' psychological distress (Muriel et al., 2009; Caruso et al., 2013; Ng et al., 2013a; 2013b; Grassi et al., 2014).

   Available data showed that although the evidence on the efficacy of psychotropic use in cancer patients is not robust (Grassi et al., 2014), 31% and 46% of cancer patients were prescribed with psychotropic medications by their general practitioners and oncologists respectively (Muriel et al., 2009). Psychotropic medications are used to relieve the psychological distress such as anxiety, depression, sleep and appetite disturbances and psychosis as well as in the treatment of cancer symptoms and treatment side effects such as fatigue, nausea, pain, hot flushes and hiccups (Caruso et al., 2013; Grassi et al., 2014).

   Our previous study using a large insurance database from the Netherlands found that psychotropic drugs prescription is common in cancer patients, starts soon after diagnosis and increases in the terminal stage (Ng et al., 2012). The result is similar with the findings of another study which compared prescription patterns in breast, prostate and colorectal cancer survivors which showed that long-term breast and prostate cancer survivors were more likely to receive at least one prescription for an antidepressant. On further analyses, those nearing the end of life received significantly more doses of antidepressants, and proximity to death also influenced prescribing for anxiolytics in breast cancer survivors (Ng et al., 2012).

   Most studies on the psychotropic prescription in cancer patient were based on the western database, there

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is absence of literature on the topic from the Asian region especially Malaysia. In this study, we aim to examine the prescription pattern of psychotropic medications in cancer patients and to show that the patients diagnosed with cancer are more likely to be prescribed with psychotropic medications.

Materials and Methods

Data

This is a retrospective cohort study. The data used in this study were extracted from the University Malaya Medical Centre (UMMC) pharmacy database. The database is the dispensing records of patients stored in the pharmacy's Medication Management and Use System (Ascribe). Data was mined using IBM's Cognos Business Intelligence PowerPlay. A report was generated for all patients dispensed medications from year 2008-2012. The report was limited to patients admitted to the cardiology ward or patients undergoing treatment at the clinical oncology ward. Fields in the report included the gender, date of birth, ethnicity, medications dispensed including quantity, date dispensed and the British National Formulary (BNF) classification for the medication dispensed. Approval from the University Malaya Medical Centre, Medical Ethic Committee was obtained prior to accessing the database.

Oncology and cardiology inpatients

Study subjects were identified from the database between 1st Jan 2008 to 31st Dec 2012. All of the patients who were admitted into the oncology and cardiology ward during the study period were identified based on the ward coding (ONCOL and CARDIO). Cardiology patients were chosen as the comparator because of their similar illness chronicity and morbidity. All the prescription data for the selected subjects were extracted from the database. The information of data of birth, gender and ethnicity which were available inside the database was also collected. The age of the subjects were taken at 31st Dec 2012.

Variables

Drug prescriptions were recorded according to National Formulary (BNF) classification. The central nervous system drug prescription were identified and recoded according to the Malaysia Index of Medical Specialities (MIMS). The following psychotropic prescriptions were included: 4a and 4b (anxiolytic and hypnotic), 4c (antidepressant) and 4c (antipsychotic).

Psychotropic drug use was defined as at least one prescription of any of the psychotropic drugs during the study period. Duplicate or repeat prescriptions were eliminated.

Covariates

The following information about the oncology and cardiology patients was gathered: age, gender and ethnicity. The age of the study subjects were taken at December 31st, 2012. Ethnicity was dichotomised into Malay and Non-Malay.

Analyses

The prevalence of psychotropic use for the oncology and cardiology inpatients was calculated for the study period (January 1st, 2008 to December 31st, 2012). The number of psychotropic drugs used in the cancer and the control group was compared. A logistic regression model was used to analyze the determinants of psychotropic drugs use in oncology patients, reported in adjusted odds ratio's. All the tests were two sided at the alpha level of 0.05.

Results

After removing cases with incomplete dataset and repeated cases, a total of 3345 oncology inpatients and 8980 cardiology inpatients were included in this study. The two groups did not differ in age; the mean age for both groups was 57 years old. There were more female (69%) in the oncology group as compared to the cardiology group.

Co-prescription of one or more psychotropic drugs to oncology patients was more frequent than in the cardiology group. One in twenty cardiology patients were 3.94 times more likely to be prescribed with one type of psychotropic as compared to the cardiology patients. Although the percentage of co-prescription of two types of psychotropic drugs was low in oncology patients (2.3%), it was significantly higher than the cardiology patients (OR=5.78, 95%CI= 3.88-8.06). The difference is even bigger for co-prescription of all three types of psychotropic between the two groups. There were significantly more patients in the oncology group with co-prescription of all three types of psychotropic drugs. (OR= 6.13, 95%CI= 4.71-7.98).

As compared to cardiology inpatients, there was a significantly higher percentage of oncology patients being prescribed with any psychotropic drug during the study period. Anxiolytic was the most commonly prescribed psychotropic drug to the oncology patients (12.3%). This was followed by 7.6% being prescribed with antidepressant drugs, which resulted in an odds of 6.07 when compared to the cardiology group. Although the percentage of oncology patients with antipsychotic drugs prescriptions was relatively low (5.6%), it was significantly higher than in the cardiology group (1.1%) (Table 1).

The results demonstrated that Non Malay female oncology used more anxiolytic/hypnotic drugs. There

Table 1 Use of Psychotropic Drugs in Oncology and Cardiology Subjects

	Oncology N=3345	Cardiology N=8980	Crude OR (95%CI)	Adjusted OR (95%CI)
Any Drug	421	235	5.36	5.25
	(12.6)	(2.6)	(4.54-6.32)	(4.41-6.24)
Anxiolytic or Hypnotic(%)	412	217	5.67	5.55
	(12.3)	(2.4)	(4.79-6.72)	(4.64-6.63)
Antidepressant (%)	260	123	6.07	6.08
	(7.8)	(1.4)	(4.88-7.55)	(4.83-7.64)
Antipsychotic (%)	187	97	5.42	5.41
	(5.6)	(1.1)	(4.23-6.95)	(4.17-7.02)

*Adjusted OR=Odds ratio adjusted for age, gender and ethnicity. OR = Odds ratio CI=confidence interval; The use of psychotropic drugs is defined as at least once prescription during the study period (2008-2010)

Table 2. Associated Factors for Psychotropic Drugs use in Oncology Patients from the Logistic Model for Each of the Covariates

	Anxiolytic/Hypnotic			Antidepressant			Antipsychotic		
	%	Crude OR (95% CI)	Adjusted OR (95% CI)	%	Crude OR (95% CI)	Adjusted OR (95% CI)	%	Crude OR (95% CI)	Adjusted OR (95% CI)
Age									
≤ 60	5.5	1.19	0.98*	3.5	1.27	1.05*	2.4	1.09	0.90*
> 60	4.7	(1.01-0.40)	(0.83-1.15)	2.7	(1.04-1.57)	(0.85-1.29)	2.2	(0.86-1.37)	(0.70-1.14)
Gender									
Female	6.6	1.85	1.21†	3.9	1.63	1.02†	2.9	1.69	1.07†
Male	3.7	(1.57-2.18)	(1.02-1.45)	2.4	(1.33-2.01)	(0.82-1.26)	1.7	(1.33-2.15)	(0.83-1.38)
Ethnicity									
Malay	3.6	0.6	0.54‡	2.7	0.6	0.74‡	2.5	1.13	1.06‡
Non-Malay	5.9	(0.50-0.72)	(0.45-0.65)	3.3	(0.64-1.00)	(0.59-0.93)	2.2	(0.89-1.44)	(0.83-1.35)

*Adjusted for cardiology group, gender and ethnicity; †Adjusted for cardiology group, age and ethnicity ; ‡Adjusted for cardiology group, age and gender

were no significant differences in the use of antidepressant or antipsychotic between gender, age or ethnicity (Table 2).

Discussion

In this study we compared the prescription pattern of psychotropic drugs in 3345 oncology patients and 8980 cardiology patients extracted from a dispensing record in a teaching hospital in Malaysia between years 2008 to 2012. We found that 12.3% of oncology patients were prescribed with anxiolytic/hypnotic, whilst 7.8% and 5.6% were prescribed with antidepressants and antipsychotics respectively. All classes of psychotropic drugs were more frequently prescribed to the oncology patients as compared to the cardiology patients. Co-prescription of more than one type of psychotropic drugs was also more often among oncology patients.

There was no significant difference of age, gender and ethnicity in the antidepressant or antipsychotic prescription rates. However, interestingly, Non-Malay Female oncology patients had a significantly higher prescription rate for anxiolytic/hypnotic drugs. This probably reflects the higher prevalence of anxiety in Non Malay women with cancer. It may also indicate that Malay female patients turned to their spirituality to counter their psychological distress. Furthermore, the use of complementary and alternative medicines (CAM) is more prevalent in the Malays. One local study found that 64% of the Malay women with breast cancer were CAM users and they believed in the power of prayer and used Malay traditional medicine to assist in healing the body's inner strength, to cure cancer, and to reduce stress (Shaharudin et al., 2011).

Our study showed that the prescription rates of any psychotropic drugs in oncology patients were higher as compared to cardiology patients. It may reflect higher level of psychological distress in the cancer patients. It is consistent with reports of significant increase in distress and decrease in well-being among cancer patients (King et al., 2013). Several studies reported that pain, fatigue, loss of appetite, anxiety and depression are commonly encountered in the terminal cancer patients (Hopwood et al., 1991; Butler et al., 1999; Ross and Alexender,

2001; Stromgren et al., 2002; Yong et al., 2006). This finding is similar with the reports by Khan et al where benzodiazepine was more often prescribed for breast and prostate cancer patient (Khan et al., 2010).

In this study the prevalence of anxiolytic/hypnotic prescription was 12.3%. Although benzodiazepines are for many decades the most frequently prescribed psychotropic drug in cancer patients, the benzodiazepine prescription in this sample is much lower compared to previous studies in which the rate of benzodiazepine prescription in cancer patients ranged from 24.5% to 28.3% (Cullivan et al., 1998; Derogatis et al., 1979). This could be due to the under-recognition of the anxiety symptoms in the cancer patient or high precaution level among clinician in the local setting to introduce anxiolytic to cancer patients. Furthermore, culturally, Malaysians tend to turn to traditional healers to complement their medical treatment. Study done by Merriam and Muhamad (Merriam and Muhamad, 2013) recently showed that the cancer patients in their study valued the emotional and spiritual benefits derived from traditional healers. Their patients reported that their faith was strengthened with reduction in their anxiety and psychological distress.

Despites the noticeable prevalence of antipsychotic drug prescription (5.6%), it was much lower compared to earlier reports by Derogatis et al in 1979 (13.3%) (Derogatis et al., 1979). In the survey on terminal cancer patients by Goldberg and Mor in 1985, the consumptions of antipsychotic drugs was 7% (Goldberg and Mor, 1985). Antipsychotic drugs are frequently used as antiemetic, which is a highly prevalent symptom in patients with terminal cancer. In the survey conducted by Derogatis et al reported more that 90% of the psychotropic drugs were prescribed because of nausea and vomiting (Derogatis et al., 1979). In addition to the control of gastro-intestinal symptoms it is likely that antipsychotic drugs are being used to control the sudden change in behavior due to acute brain syndrome or psychosis such as hallucination and delusion during the terminal phase in these patients (Peterson et al., 1987). These symptoms are often related to the progression of cancer, brain metastasis, electrolytes imbalance and effects of cancer treatment.

The prevalence of antidepressant prescription in cancer patients was about 7.8% in this study, which was

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much lower than the finding of our previous study based on a database from the Netherlands (Ng et al., 2013a). Again, the low prescription rate could attributed to the under-diagnosis of depression and the high caution level in prescribing psychotropic drugs to cancer patients in the local setting. It is known that antidepressants are often prescribed not only for depression but also various other indication such as pain control, insomnia, panic attacks and appetite stimulation.

Limitations of this study include the fact that the study was restricted to the five years of the study period. Patients who received psychotropic prescription prior or after the study period are not identified. This may underestimate the prescription rates in these patients and bias cannot be ruled out. Social and family support which may help the patients to cope with their psychological problem (Liu et al., 2011) was not measured in this study. Lastly, clinical data, such as cancer stage, type of cancer and physical comorbidity were not documented in the database. These factors might confound the result in the analysis of psychotropic drugs prescription rates.

In conclusion, the prescription rates of anxiolytic/hypnotic, antidepressant and antipsychotic among oncology patients were higher that the cardiology patients. Non Malay female cancer patients were more often prescribed with anxiolytic/hypnotic drugs. The highly frequent use of psychotropic drugs seems to be a reflection of the high levels of psychological distress among cancer patients. Further studies are needed to evaluate and to optimize psychotropic drug prescription in cancer patients.

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