Dopamine Antagonist Prescribing Practices in Patients With Parkinson Disease

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This study examines clinician prescribing habits at 3 VAMCs to see whether a change in the electronic medical record at 1 VAMC leads to a change in prescribing patterns of dopamine antagonists in patients with Parkinson disease compared with the other 2 centers.

Psychosis and nausea are common problems in patients with Parkinson disease (PD) and are often treated with dopamine antagonists, medications that can worsen parkinsonism. In 2 surveys of clinic patients with PD, 24.4% complained of nausea at least once in the month before the clinic visit, and 39.8% experienced hallucinations in the 3 months before the visit.[1,2]

Historically, atypical antipsychotics were felt to have a lower risk for worsening parkinsonism. Through most of the 1990s clozapine, olanzapine, quetiapine, and risperidone were felt to be appropriate to treat psychosis in PD. However, over time some atypical antipsychotics produced extrapyramidal signs. The most restrictive recommendations, published in 2001, suggested that only quetiapine or clozapine be prescribed.[3] A 2006 American Academy of Neurology (AAN) practice parameter came to the same conclusion.[4]

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In the 1990s, 2 studies on antipsychotic use in PD in the United States found that 88% to 99% of prescribed antipsychotics were contraindicated typical antipsychotics.[5,6] A later study in Canada in patients with PD found the rate of typical antipsychotic use had decreased from 56% in 1998 to 9% in 2002.[7] In the Canadian study, olanzapine and risperidone (which can cause extrapyramidal signs) were included as acceptable medications. These studies reported the percentage of prescribed antipsychotics that were contraindicated, not the percentage of patients with PD on contraindicated medications. There are no recently published data in an American population on antipsychotic drug use or antiemetic dopamine antagonists: metoclopramide, prochlorperazine, and promethazine.

In order to determine the current state of contraindicated dopamine antagonist prescribing practices, we determined the number of times these medications (fluphenazine, haloperidol, metoclopramide, molindone, olanzapine, prochlorperazine, promethazine, risperidone, thioridazine, thiothixene, and ziprasidone) were prescribed to patients with PD in 3 VAMCs in the Pacific Northwest. To avoid dopamine antagonist prescribing in patients with PD, the Portland VAMC implemented a medication comment in the electronic ordering system beginning June 2004.

MATERIAL AND METHODS

Permission to search the Veterans Data Warehouse was granted by the Portland VAMC Institutional Review Board. The data were examined in 12-month intervals for 4 years before and 3 years after June 2004 when Portland implemented the medication comment (June 2000 – May 2001, June 2001 – May 2002, June 2002 – May 2003, June 2003 – May 2004, July 2004 – June 2005, July 2005 – June 2006, and July 2006 – June 2007) for the 3 largest centers within Veterans Integrated Service Network (VISN) 20. When an order for a dopamine antagonist was requested at the Portland VAMC, the statement, "this medication is contraindicated in patients with Parkinson disease," would appear in the comment section of the electronic ordering system. June 2004 was not included in the analysis, because it was not clear when during this month the medication comment was fully implemented.

To most accurately identify the number of patients with PD, the

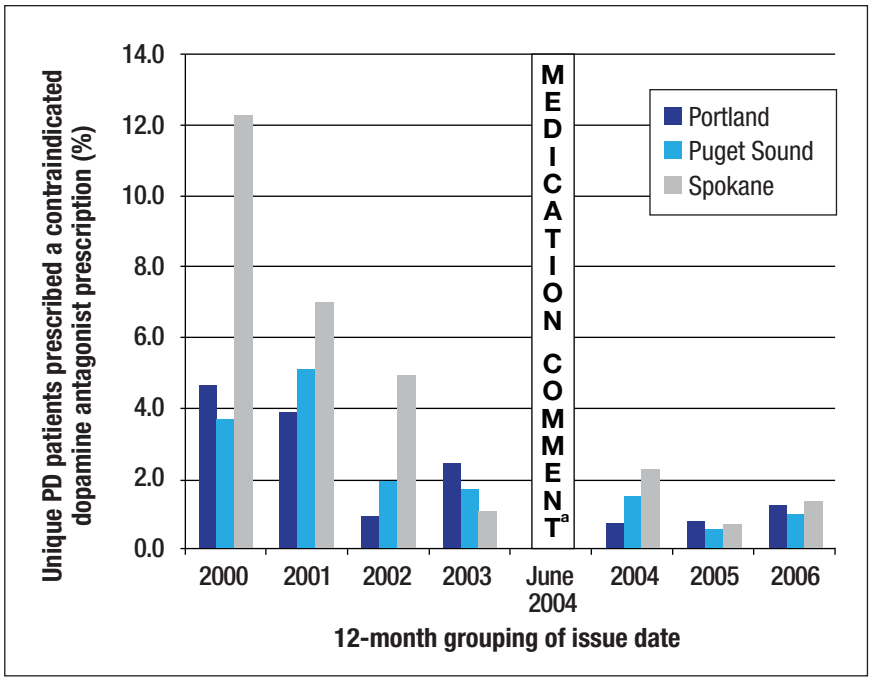

Figure 1. Percentage of patients with PD by location on contraindicated dopamine antagonists for each 12-month period. [a]Data for June 2004 are not included in the analysis, because it was not clear when during this month the medication comment was fully implemented.

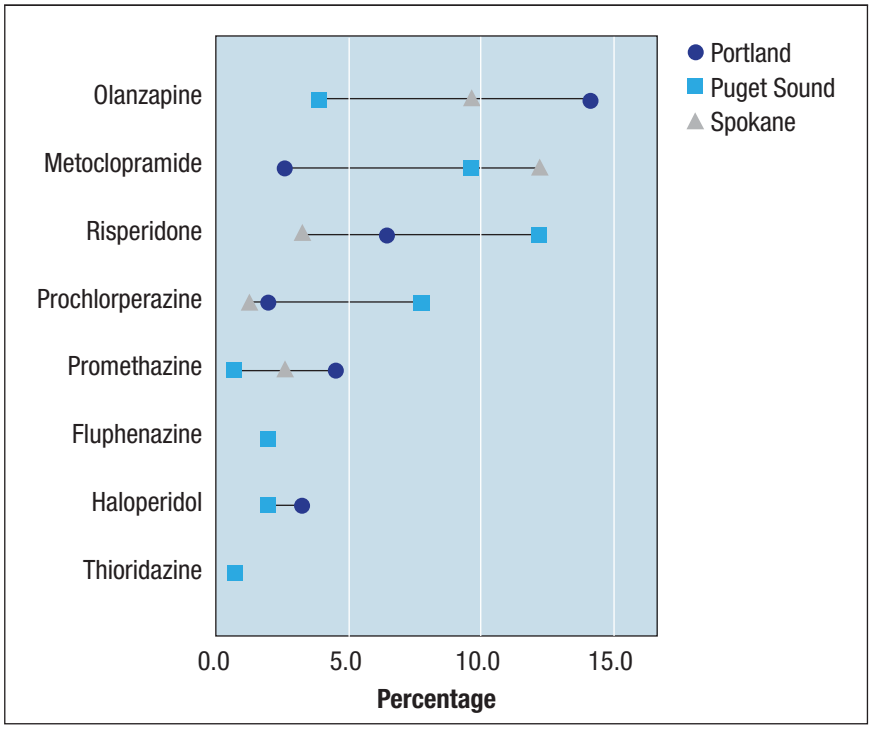

Figure 2. Cumulative distribution of specific prescriptions for 3 VAMCs between 2000 and 2006.

VISN 20 database was queried for all patients who were diagnosed with PD (ICD 9 Code = 332.0) during each 12-month period that was evaluated in the Portland, Puget Sound, or Spokane VAMCs. Patients who also had a diagnosis of bipolar, schizophrenia, and schizoaffective disorders (ICD 9 Codes = 295.xx, 296.xx, 311.xx, or V11.0) were excluded. The number of patients who joined (obtained a new diagnosis of PD) and the number of patients who left (died or were lost to follow-up), were calculated for every 12-month period.

To determine the number of patients with PD prescribed a contraindicated dopamine antagonist, the records of the patients identified above were queried for those prescribed a dopamine antagonist (fluphenazine, haloperidol, metoclopramide, molindone, olanzapine, prochlorperazine, promethazine, risperidone, thioridazine, thiothixene, and ziprasidone) from June 1, 2000 to June 31, 2007. Prescriptions where the issue date or the dispense date equaled the cancellation date were removed. For each 12-month period, the number of prescriptions of contraindicated drugs and the number of unique patients were identified for each VAMC. The percentage of patients with PD at each center on these medications was determined. All prescriptions were included whether written by a primary care doctor, psychiatrist, or neurologist.

RESULTS

The number of patients with PD increased substantially between 2000 and 2007 in all 3 centers. The Portland PD census increased by more than 100% (240 patients to 492 patients), Puget Sound by 83% (280 patients to 512 patients), and Spokane by 66% (122 patients to 203 patients). One hundred fifty-six pre-

scriptions of contraindicated dopamine antagonists were used in the analysis.

The percentage of unique patients with PD who were prescribed a dopamine antagonist decreased from 4.5% to 1.2% at the Portland VAMC, 3.6% to 1.0% at the Puget Sound VAMC, and 12.3% to 1.5% at the Spokane VAMC (Figure 1). Our data show that the number of dopamine antagonists prescribed in all locations decreased by roughly 80% to 90% between 2000 and 2007.

The specific contraindicated dopamine antagonists prescribed at each VAMC were fairly similar. Olanzapine, metoclopramide, and risperidone were the first, second, and third most frequently prescribed, respectively. Each center had slightly different prescription distributions, but 1 of these 3 drugs was the first or second most commonly prescribed dopamine antagonists at each center. Figure 2 shows the specific prescriptions, by center, for the 7-year period that was examined.

Table 1. Change in prescription rates before and after a medication comment

Location	Before medication comment (% on contraindicated medication)	After medication comment (% on contraindicated medication)	*P* value
Portland[a]	2.95	0.83	.08
Puget Sound[b]	3.1	0.97	.07
Spokane[c]	6.35	1.4	.12

[a] The medication comment was only implemented in Portland.

[b] There was no statistically significant difference in the change in contraindicated prescriptions before and after the comment in Portland compared with Puget Sound ($P > .05$).

[c] Spokane did have a significant difference in the change in contraindicated prescriptions before and after the comment compared with Portland ($P < .01$). This change, however, was more prominent in Spokane, suggesting no effect of the comment.

DISCUSSION

From 2000 to 2007, the numbers of patients with PD in VISN 20 dramatically increased. The increase is probably a combination of aging of the veteran population, better recognition of the disease, and more patients seeking care in the VA system. During the same period, the number of patients with PD transferring care to the VA increased, more than likely because of concerns over medication costs.

The number of contraindicated dopamine antagonists prescribed to patients with PD has greatly improved over the last 7 years at all centers. Overall, the VA Puget Sound Health Care System and the Portland VAMC, which have specialized Parkinson disease centers, had slightly lower prescribing rates. The decrease in prescriptions is likely due to increased awareness that these medications are contraindicated in patients with PD. In searching for psychosis and PD in PubMed, the numbers of papers on this topic increased over the time of the study from 25 papers published in 2000 to 40 papers published in 2007. Unique to Portland is the medication comment, which was implemented in June 2004. This comment, which appears when a clinician enters an order in the electronic medical record for a contraindicated dopamine antagonist, states that this medication is contraindicated in patients with PD. Apparently, the medication comment did not decrease the number of prescriptions of contraindicated medications, because a clear trend of a decrease in these prescriptions in patients with PD already existed before the comment was instituted (Table 1). Also, the reduction in the contraindicated dopamine antagonists was similar in the centers that did not employ the medication comment.

The most common prescriptions were metoclopramide, olanzapine, and risperidone. Considering that until 2001 olanzapine and risperidone were the accepted standard of care for patients with PD and psychosis, it is not surprising that these were commonly prescribed.[3] The use of antiemetics in PD is, to our knowledge, unique as all prior studies on dopamine antagonists focused only on antipsychotics. Metoclopramide, prochlorperazine, and promethazine represented 34.6% of dopamine antagonists prescribed to patients with PD. The number of prescriptions for medications also decreased during the study. Adding up all centers, there was an average of 16 prescriptions per year between June 2000 and June 2004, decreasing to an average of 5 prescriptions per year between June 2004 and June 2006.

The number of patients with PD who were in our VISN 20 data set is a strength of this study; the relatively small number of prescriptions for contraindicated medications is a weakness. Some weaknesses are inherent to a large database search. One major concern is that some patients

with PD and psychosis have been inappropriately labeled as bipolar, schizophrenic, or schizoaffective and, therefore, not included in the analysis. Overall, it is encouraging that fewer inappropriate dopamine antagonists are being prescribed.

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Author disclosures

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