Self-Induced Water Intoxication Treated with Risperidone

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Objective: To determine whether or not risperidone is efficacious in treating self-induced water intoxication in patients with chronic schizophrenia.

Method: We carried out a prospective 11-month open-label study using risperidone to treat 8 men with chronic schizophrenia and self-induced water intoxication.

Results: The 8 men were not able to reduce their fluid consumption compared with their baseline intake. Risperidone, however, significantly decreased the Brief Psychiatric Rating Scale (BPRS) scores of this very chronic group.

Conclusions: Although risperidone decreased schizophrenic symptoms, it did not have significant efficacy in treating self-induced water intoxication. This study may have implications for the treatment of addictive behaviour.

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Key Words: water intoxication, polydipsia, risperidone, clozapine, schizophrenia, addiction

Self-induced water intoxication is a common and serious problem. Polydipsia occurs in over 20% and water intoxication in up to 5% of chronic psychiatric inpatients, the majority of whom have schizophrenia (1). Case reports have indicated clozapine may be beneficial in treating self-induced water intoxication (2–5). This raises the hope that we may be able to treat self-induced water intoxication with serotonin–dopamine antagonists. Clozapine has significant side effects, however, and is fairly costly.

Risperidone is a potent dopamine and serotonin-2A (5-HT₂A) blocker that has been shown to be superior overall to haloperidol in the management of chronic schizophrenia (6). A recent case report has described the successful treatment of polydipsia and hyponatremia with risperidone in a 53-year-old man with schizophrenia (7). Clinically, we have also noted that risperidone seems to decrease fluid consumption in patients with chronic schizophrenia and self-induced water intoxication. We carried out a prospective open-label study to determine whether risperidone may be useful in treating the latter condition.

Method

We selected 8 consecutive men (mean age ± SD = 44.4 ± 9.9 years) who were starting risperidone treatment and who met DSM-III-R criteria for chronic schizophrenia. We obtained written informed consent after giving the subjects a complete description of the study. Their mean duration of hospitalization was 16.7 ± 9.0 years. All participants had a long history of polydipsia and episodic water intoxication. They had resided on the 25-bed all-male Water Intoxication Unit at Riverview Hospital for an average of 5.4 ± 3.3 years. We have characterized patients on this unit in a previous report (8).

We monitored the fluid intake of the patients for an 8-week period by weighing them 4 times per day. We calculated the daily maximum percent increase in body weight with respect to their 07:30 baseline weight. Serial body weight measurement is a useful way of monitoring changes in hydration (9). We completed the BPRS for 7 of the 8 men.

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We then started them on risperidone in doses up to 16 mg/day. We tapered and then discontinued their previous antipsychotic medication over 2 weeks. We tried to minimize changes to their medications over the study period. We
continued to monitor fluid intake by weighing the men 4 times per day over a 6-month period. We again completed the BPRS for those assessed previously.

When we started the study, optimal dosing for risperidone had not been determined. During the study, we learned that the optimal dose for risperidone was from 6 to 8 mg/day. At the end of the 6-month period, we decided to extend the study using the optimal dose. We reduced the patients’ risperidone dosage to 8 mg/day. We then waited one month to allow the patients time to stabilize on the lower dose. Following the stabilization period, we continued to monitor fluid intake by weighing the men 4 times per day over a further 2-month period.

Results

Following the first 6 months of treatment, the mean daily percent change in body weight declined slightly but not significantly (baseline [mean ± SD] = 3.89% ± 0.81%; after 6 months of risperidone treatment = 3.60% ± 0.56%; df 7, t = 1.31, P = 0.23). The average risperidone dose was 13 mg over the 6-month treatment period (range 11 to 15 mg/day). There was, however, a significant improvement in clinical condition as assessed by the BPRS (baseline = 24.7 ± 5.6; after 6 months of risperidone treatment = 14.7 ± 4.8; df 6, t = 3.49, P = 0.013).

Following the additional 3 months of treatment at the lower dose, the mean daily percent change in body weight slightly declined with respect to baseline, but again, it did not decline significantly (baseline = 3.89% ± 0.81%; posttreatment = 3.49% ± 0.79%; df 7, t = 1.49, P = 0.18). The mean risperidone dose was 8 mg/day during the last 2 months of the study.

Discussion

Though there was a trend toward decreased fluid intake, our clinical impression that risperidone decreased fluid intake in schizophrenic patients with self-induced water intoxication was not upheld by our study. Risperidone did have a significant effect, however, in improving clinical status as measured by the BPRS. The marked improvement in clinical status may have caused staff to perceive, through a “halo” effect, that risperidone was helping patients to decrease their fluid intake significantly. Risperidone may still be useful in the treatment of self-induced water intoxication because patients who suffer fewer psychotic symptoms would be able to derive greater benefit from group psychotherapy and behaviour therapy.

It is possible that risperidone may be more efficacious at a lower dose than we used in this study. It is also possible that using a large dose of risperidone initially biased the results. If this were the case, however, we would have expected a more robust response when we reduced the dose. Our study does not address the use of adjunctive agents, such as lithium, to augment the effect of risperidone. This possibility needs to be explored further.

This study may have theoretical interest in the treatment of addiction. Although the etiology of self-induced water intoxication remains unknown, we have suggested that it may be a form of addictive behaviour (8,10). It has been postulated that clozapine has an antiaddictive effect in schizophrenia (11,12). Case reports also suggest clozapine is efficacious in treating self-induced water intoxication (2–5). Clozapine and risperidone have a markedly different spectrum of action on receptors (13). In particular, risperidone is a much more potent 5-HT₂A blocker (13). Clozapine, in contrast, blocks muscarinic, 5-HT₁, 5-HT₃C, and 5-HT₃ receptors, none of which is blocked by risperidone (13). If clozapine proves to be more efficacious at treating self-induced water intoxication than risperidone, valuable clues may be gained as to which receptors are important in addiction.

Clinical Implications
• Risperidone did not have a significant antipolydipsic effect.
• Risperidone may, however, help these patients to be more amenable to group and behaviour therapy.

Limitations
• Open-label, all-male study.
• Patients all had a chronic problem with self-induced water intoxication.
• Use of adjunctive agents was not addressed.

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References

Résumé

Objectif : Déterminer l’efficacité de la rispéridone pour traiter l’autointoxication hydrique chez des patients atteints de schizophrénie chronique.

Méthode : Nous avons mené une étude prospective ouverte d’une durée de 11 mois sur le traitement à la rispéridone de 8 hommes atteints de schizophrénie chronique et d’autointoxication hydrique.

Résultats : Les 8 hommes étaient incapables de réduire leur consommation de liquides par comparaison avec leur apport de départ. Cependant, la rispéridone a beaucoup réduit les scores de ce groupe très chronique à l’échelle abrégée d’appréciation psychiatrique (Brief Psychiatric Rating Scale, BPRS).

Conclusions : Bien que la rispéridone ait réduit les symptômes de schizophrénie, elle n’est pas très efficace pour traiter l’autointoxication hydrique. Cette étude aura peut-être une incidence sur le traitement d’un comportement pouvant engendrer une dépendance.