Injectable Risperidone During Hemodialysis

To the Editor: Mental illnesses are prevalent in people with chronic kidney disease and are commonly associated with increased morbidity and mortality.[1] Patients with chronic kidney disease often present with psychiatric issues that include depression, anxiety, suicidal ideas, and delirium.[2] Those with schizophrenia evidence a 25% increase in the risk of developing chronic kidney disease, and up to 30% of persons with chronic kidney disease experience depression.[1,3] Patients with unipolar depression receiving dialysis are likely to be noncompliant with medication and experience a compromised quality of life.[4] Most patients receiving hemodialysis are not fully adherent with regard to medical management of their diabetes, hypertension, and sobriety.[2] Improvement of compliance in these individuals is a challenge, especially when medical illnesses are comorbid with psychiatric conditions.

In chronic kidney disease, there is a progressive decline in the glomerular filtration rate, resulting in end-stage renal disease, which may require renal replacement therapy by hemodialysis to correct electrolyte and fluid imbalances while removing toxins from the body. Renal dysfunction may alter the pharmacokinetics of many medications that are excreted by the kidneys. It is important to evaluate the efficacy and adverse effects of neuroleptic drugs to ensure optimal clinical outcomes for patients with end-stage renal disease or chronic kidney disease who are receiving hemodialysis. This evaluation requires frequent monitoring or dosage adjustments, since such patients are at high risk for medication-related problems.[5] Dosing adjustments and restrictions of psychopharmacotherapies for patients with renal failure are compiled in previously published medical literature.[2] Our experience in the management of a patient receiving hemodialysis and long-acting injectable neuroleptic medication is described.

Case report. A 41-year-old man with a past medical history of posttraumatic stress disorder, bipolar I disorder with psychotic features, rheumatic heart disease, and diabetes mellitus type 2 complicated by severe renal disease presented to the emergency department with acute-onset dyspnea. Tachycardia, bilateral pulmonary rales, and pitting edema of both legs were noted during the physical examination.

A transthoracic echocardiogram revealed mitral stenosis and regurgitation. The patient was hospitalized due to pulmonary edema and rheumatic mitral valve stenosis. His scheduled medications prior to admission included haloperidol, quetiapine, metoprolol, omeprazole, aspirin, lisinopril, atorvastatin, amlodipine, insulin aspart, and insulin glargine. He had reportedly been medication nonadherent.

Laboratory assays documented an elevated creatinine concentration at 6 mg/dL and a plasma potassium level of 6.2 mEq/L. The nephrology team initiated hemodialysis 3 times per week.

On day 9 of hospitalization, the psychiatry department was consulted because the patient evidenced acute confusion. He was disoriented and exhibited memory dysfunction. Despite trouble finishing sentences due to echolalia, he denied auditory or visual hallucinations. Brain imaging and comprehensive laboratory investigations revealed no organic causes of psychosis, including no sign of infection or acute intracranial pathology. Oral quetiapine 200 mg and haloperidol 5 mg were initiated, and his confusion diminished. Additionally, he began to exhibit bizarre features of apathy, flat affect, and minimal eye contact. Delirium and psychiatric decompensation were the current diagnoses (*DSM-5* criteria). Quetiapine was discontinued, with subsequent clinical improvement in mentation. He was prescribed oral haloperidol 10 mg at bedtime and 5 mg every morning before discharge from the hospital.

Shortly after discharge, the patient presented to the hospital again for acute hypoxemic respiratory failure secondary to pulmonary edema. During admission, he exhibited a waxing and waning mental status. Haloperidol was discontinued due to worsening dysphoria and possible tardive dyskinesia. A nightly 2-mg dose of oral risperidone was initiated. Meanwhile, he exhibited social isolation, low energy, poor concentration, psychomotor retardation, paranoia, auditory hallucinations, and catatonia features. Oral risperidone was increased to 2 mg twice daily. This medication change induced global clinical improvement, ameliorating his psychotic features. He began a regimen of biweekly long-acting risperidone 25-mg injections, while still taking oral risperidone 2 mg twice daily for 3 weeks.

Longer-term outpatient follow-up of this patient revealed a stable mental status with no psychosis. His maintenance antipsychotic medication was long-acting risperidone injections biweekly at 25-mg doses. No side effects were reported.

Special attention is indicated when prescribing neuroleptic drugs to patients undergoing hemodialysis. Dialysis may decrease the blood levels of some medications, and kidney failure limits excretion of certain medications.[6] Most psychotropic drugs are fat soluble and cannot be dialyzed.[7]

Most neuroleptic drugs are extensively bound to plasma proteins, making their tissue levels variable and potentially higher.[6] Long-acting injectable formulations are available for the first-generation antipsychotics fluphenazine and haloperidol and the second-generation antipsychotics aripiprazole, olanzapine, paliperidone, and risperidone. Among these available long-acting injectable formulations, aripiprazole is the most highly bound to serum proteins, mainly albumin (>99%). Risperidone is the least protein bound, with the parent compound and its main metabolite 89% and 77% bound to plasma proteins, respectively.[8]

Our patient, who exhibited psychosis and had recently started hemodialysis for end-stage renal disease, was successfully managed with long-acting injectable risperidone. Information regarding the use of antidepressant, antipsychotic, and sedative medications in patients with chronic kidney disease is limited, and the drug of choice is often guided by past experiences, anecdotal evidence, and case-by-case observation.[2]

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