Risperidone induced tardive movements in an elderly male-a case of cognitive decline masked by behavioral abnormalities

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Abstract

Tardive dyskinesia is a drug emergent side effect associated with long-term exposure to neuroleptics. Risperidone has lesser propensity to cause tardive movements. A 67-year-old male presented with tardive symptoms. He had oromasticatory and limb movements. He was started on 2 mg of risperidone for agitation and behavioral disturbance 4 years ago. He also developed cognitive decline over the years. Clinician must be aware of the possibility of tardive movements with risperidone and the need for frequent evaluation of cognitive function in any elderly male.

Introduction

Tardive dyskinesia (TD) is a broad term that includes choreiform, myoclonic and athetoid movements. These movements make their appearance only late in the course of antipsychotic treatment. The commonest site is around the mouth and tongue. The tongue protrudes, twists along with chewing and twisting like movements. Nearly 10-20 percentage of the patients given antipsychotics for more than a year can develop tardive dyskinesias and the incidence is very high in the elderly group.[1] Previous studies by Correll and Schenk proved that prevalence of tardive dyskinesia was higher in patients using first generation rather than second generation antipsychotics.[2]

Incidence of TD in patients over the age of 45 years has been reported as 15-30% after 1 year of treatment with a prevalence rate of up to 50-60%.[3] The pathophysiology behind these movements are the dopamine-receptor super sensitivity hypothesis which posits that prolonged dopamine-receptor blockade results in increased sensitivity of post-synaptic receptors.[4] Tardive movements can result in intolerable pain, disability, depression and suicide. Even milder movements can result in significant depression for the individual, hence, requires immediate attention.[4] A previous study has showed an annual incidence 2.6% of emergent persistent tardive dyskinesia in the elderly patients with dementia on risperidone. Whereas the incidence with conventional antipsychotics was found to be around 25%.[5]

Case Report

A 67-year-old male got admitted in the Intensive Care Unit with elevated blood sugar levels and was diagnosed as a case of diabetic ketoacidosis. His family members reported the physician that he was already on antipsychotics and hence a psychiatry call over was given. On detailed psychiatric history taking, it was revealed that he had restlessness, wandering behavior at night, sleep initiation difficulties four years ago which was gradual in onset and progressive in nature. He was started on tablet risperidone 2 mg and trihexyphenidyl 2 mg by a psychiatrist. After a span of one month, the family members noted that he had adequate sleep and his wandering episodes reduced. He continued to take risperidone, but he slowly started to have forgetfulness and way finding difficulty. He would not be able to recognize the family members, would not remember the dates, month and year. His language skills also deteriorated, and he would be keeping on repeating the same words again and again. At times he would also utter meaningless words. He also had difficulties in forming a meaningful sentence or phrase. His communication with the family members also gradually reduced. He did not have any abnormal movements, incontinence or aggressive behavior. At times he would be keeping on talking to himself. He was not on a regular follow up with the psychiatrist. But on all his consultations he was advised to continue the tablet risperidone and trihexyphenidyl.

His last psychiatric consultation was before six months for his worsening aggressive behavior and wandering. His risperidone dose was increased to 4mg. Four weeks after the increase in dosage, his family members noted that he started to have repeated head nodding like movements and had twisting movements of his hands and legs. While he was walking, it appeared as if he was dancing. He had tremulousness in both hands. He would be rotating his head while talking. His speech also became very slurred. All those symptoms were very much disabling for him. But neurologist or psychiatrist consultation was not sought as the family members attributed all these symptoms to be a part of his ongoing mental issues.

His appetite began to decrease. He was a known case of diabetes mellitus on oral hypoglycemic drugs. One day prior to admission, he became unresponsive, so he was brought to the hospital. On admission, his blood sugar levels were found to be 388 mg/dL. All other investigations like complete blood count, liver function tests, thyroid function tests, urine routine examination, serum electrolytes were found to be normal. His renal function tests were found to be deranged. His blood urea was 67 and serum creatinine was 1.3. This was probably due to dehydration. He was found to be negative for viral markers like hepatitis B and C. Brain imaging (CT scan) showed atrophic changes and periventricular ischemic changes (Figure 1).

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Key words: Tardive dyskinesia; risperidone; dementia.

Contributions: the authors contributed equally.

Conflict of interest: the authors declare no potential conflict of interest.

Ethical approval and consent to participate: obtained.

Availability approval and consent to participate: data and materials are available by the authors.

Informed consent: the manuscript does not contain any individual person's data in any form.

Received for publication: 29 August 2022.
Accepted for publication: 23 December 2022.

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Geriatric Care 2022; 8:10818
doi:10.4081/gc.2022.10818

On examination, it was noted that he had lip smacking movements, tongue protrusion on talking and orofacial movements. He was not oriented to time, place and person. He had irrelevant talk. The following scales were administered: i) abnormal involuntary movements scale (AIMS)-29; ii) confusion assessment method for intensive care unit 7 delirium severity scale-score 7.

A diagnosis of delirium not induced by alcohol or other psychoactive substances

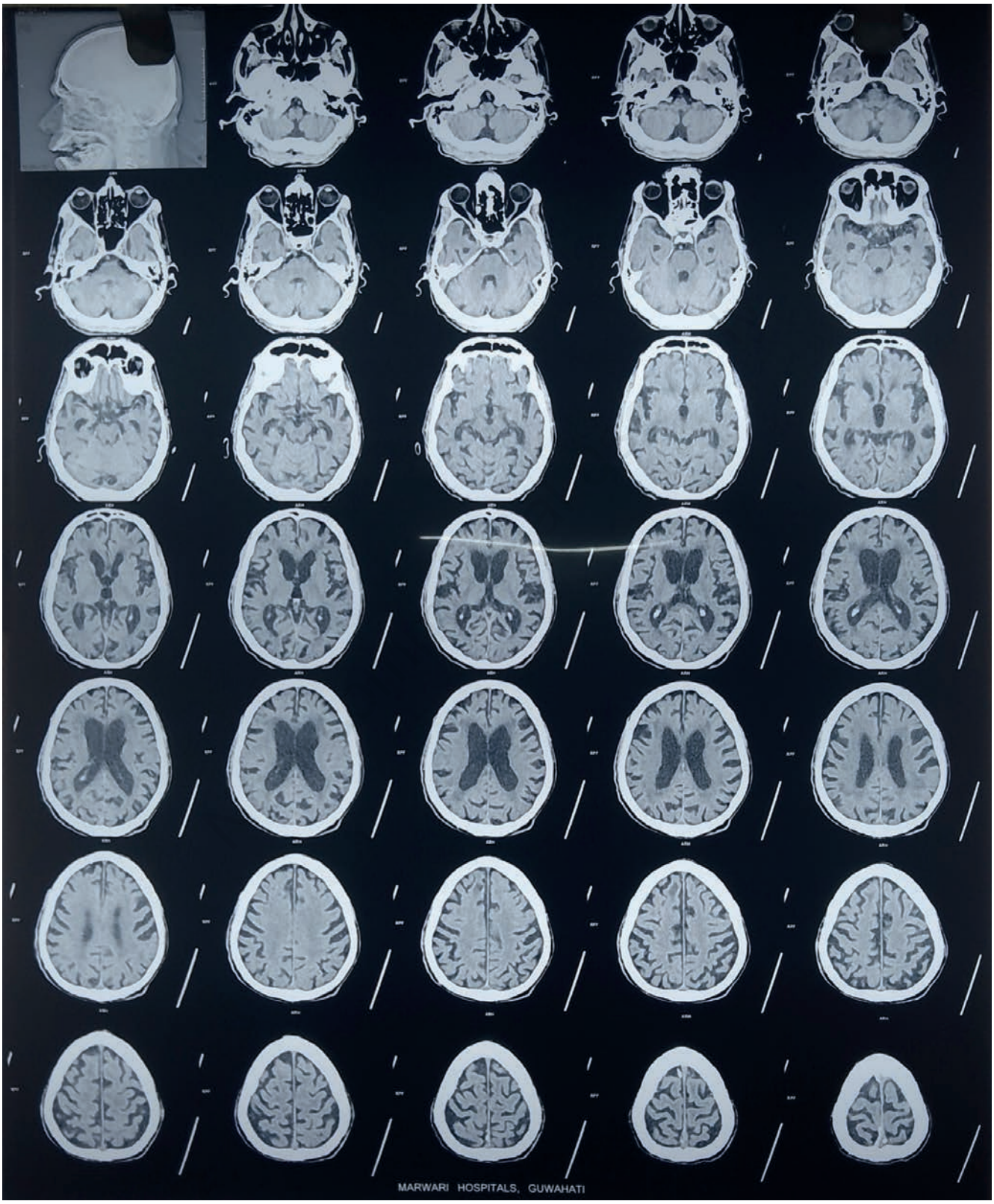

Figure 1. Brain imaging (CT scan) showing atrophic changes and periventricular ischemic changes.

was made in accordance with the International Classification of Diseases tenth edition (ICD-10). He was started on normal saline and insulin infusion for his altered blood glucose levels. His risperidone and trihexyphenidyl combination were stopped. He was started on tablet olanzapine 5 mg, vitamin E capsules 400 mg per day in divided doses, tablet clonazepam 1 mg at night for sleep and tablet baclofen 10 mg at night. After five days, he became oriented to time, place and person. Irrelevant talk reduced. Mini mental status examination was administered. His score was 20. According to ICD-10 criteria, a diagnosis of dementia in Alzheimer's disease was made. The movements were diagnosed as medication induced movement disorder tardive dyskinesia as per the *Diagnostic and Statistical Manual - Fifth Edition* (DSM-5). He was started with tablet donepezil 2.5 mg along with the already prescribed medications for tardive dyskinesia. Tablet baclofen dose alone increased to 20 mg at discharge. A telephonic phone call was made after 15 days of discharge. The family members reported that movements were under control, there was no disorientation. Also, irrelevant talk reduced. Family members were psycho educated about the need for regular follow ups and the role of medications in controlling the symptoms.

Discussion

Persons with diabetes mellitus are at higher risk for developing to tardive dyskinesia. Our patient had uncontrolled diabetes mellitus running for many years. This might be a major contributory factor for the development of his abnormal movements.[1] Among antipsychotics, risperidone has 10-20 times less risk for precipitating tardive dyskinesia.[1] But our patient developed dyskinetic movements with tablet risperidone. Previous research have highlighted an interesting point that ventricular enlargement on Computerized Tomography (CT) scan was found to be a risk factor.[1] Our patient's CT scan reports showed enlarged ventricles and diffuse cerebral atrophy in accordance with the previous study results.

Gama amino butyric acid (GABA) hypothesis suggests that antipsychotics induced destruction of the GABA pathway resulted in TD.[6] Hence GABA analogues like clonazepam is effective in the treatment of TD. Thaker *et al.* suggested that clonazepam and vitamin E could be used as a free radical scavenging agent in the treatment.[7] Our patient was treated with the same. Anticholinergic drugs worsen TD generally and improvement in TD severity ratings have been noted in up to 60% of patients withdrawn from anticholinergic agents.[4] Baclofen was found to be effective in our patient. Clinical trials have suggested that gingko biloba in doses up to 240 mg is effective in controlling the tardive movements.[6] Gingko biloba was initiated in our patient in view of the abnormal movements as well as for the underlying cognitive decline. Risk factors highlighted by previous studies which were found in our patient were being elderly, long term exposure to antipsychotic agents, diabetes mellitus and cognitive disturbances.[8] Few recommendations by Thakur *et al.* for early detection are that critical, objective indications to be followed for prescribing antipsychotics.[9] During our patient's first psychiatric consultation 4 years back, he was started on tablet risperidone for his abnormal behaviors.[9] Long term use of antipsychotic agents to be avoided especially in the elderly group,[9] but tablet risperidone was continued for years together in our patient. Regular screening and specific assessments to be done for early tardive dyskinesia.[9] Since the patient was on irregular follow up, this could have been missed.

Many previous studies have highlighted the role of risperidone in ameliorating the tardive movements. One study proved that risperidone 6 mg/day was found to be effective in controlling the tardive movements rather than stopping the antipsychotics.[10] Previous studies suggests that risperidone has antidyskinetic properties in the dose range of 6-16 mg/day particularly in buccolinguo-masticatory syndrome,[11] but our patient developed abnormal movements at a dose of 4 mg. A randomized controlled trial showed that risperidone significantly reduced the tardive movements in a 12 week trial. Mean reduction of AIMS score was 5.5 with risperidone and was 1.1 with placebo.[12] Though many previous studies have highlighted the anti-dyskinetic properties of risperidone, our patient developed abnormal movements with risperidone only and is a fascinating point about this case report.

Research suggests that psychotic features are associated with prodromal or mild cognitive impairment stage of the neurodegenerative spectrum of diseases.[13] Gerritsen *et al.* highlighted the role of challenging behaviors in the diagnosis of psychosis in patients with dementia. A specifier called agitation is included in the modified Jeste and Finkel criteria for diagnosing psychosis in major and mild neurocognitive disorders. Agitation is when there is evidence, from history or examination, of prominent agitation with or without physical or verbal aggression.[14] In our patient, the initial presenting symptom was a prominent agitation with a sleep disturbance which masked the underlying ongoing cognitive decline. Motoric cognitive risk syndrome states that slow gait and cognitive complaints can serve as a predictor for the ongoing cognitive decline.[15] But in our case the abnormal movements masking the gait hampered the recognition of the underlying cognitive decline. This is an important finding of our report and highlights the need for frequent assessment of cognitive functions in any elderly patient presenting with psychosis or agitation.

Conclusions

Tardive dyskinesia resolves spontaneously in most of the cases. Reintroduction of higher doses of neuroleptics to reverse the movements has to be avoided. This might result only in temporary relief but returns the original pathogenesis and worsens the ultimate disability. I would underline the importance of a more frequent follow-up in comorbid subjects treated with antipsychotics.

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