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Case Report: Continuous positive airway pressure for obstructive sleep apnoea improved oculogyric crises as well as psychotic symptoms in a woman with schizophrenia and developmental disability

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Electronic Submission

Keywords: oculogyric crises, schizophrenia, obstructive sleep apnoea, risperidone

Number of tables: 0

Number of figures: 0

Word count: 1393

Highlights:

- Management considerations for the adverse effects of high dose risperidone treatment in those suffering from schizophrenia and concurrent developmental disability
- Obstructive sleep apnoea is notoriously underdiagnosed in both the general population as well as those suffering from mental health disorders, particularly schizophrenia
- Treatment of obstructive sleep apnoea with continuous positive airway pressure increased patient wellbeing, allowing down-titration of risperidone thereby ameliorating the drug-induced oculogyric crises in the case patient

Abstract

Introduction: This report highlights the risk factors and complexities of schizophrenia as well as the adverse effects of treatment. Obstructive sleep apnoea (OSA) has a notorious history of under-diagnosis in both the general population as well as those suffering from mental health disorders, particularly schizophrenia. Antipsychotics have life altering side effects contributing both to a decrease in quality of life as well as increasing morbidity and mortality.

Case overview: This case report presents a 61-year-old female with diagnoses of schizophrenia, frontal lobe epilepsy, a developmental disability, oculogyric crises (OGC), and obstructive sleep apnoea.

Discussion overview: Early intervention with continuous positive airway pressure (CPAP) in those suffering from OSA can have dramatic effects decreasing the burden of concurrent disease. This report showcases that treatment of OSA with CPAP increased patient wellbeing, allowing down-titration of risperidone, and thereby ameliorating the drug-induced OGC in this patient.

Introduction

Individuals suffering long-term from schizophrenia experience broad functional deficits negatively impacting clinical outcome [1]. This case report presents a 61-year-old female with schizophrenia receiving long-term treatment with risperidone. She has a complex background with concurrent diagnoses of frontal lobe epilepsy, a developmental disability, and obstructive sleep apnoea (OSA). This report elucidates some of the risk factors and complexities of schizophrenia as well as highlighting some adverse effects of treatment. Lastly, concerning the long-term management, continuous positive airway pressure (CPAP) is presented as a novel consideration to reduce the burden of disease in those suffering from schizophrenia with concurrent OSA.

Case

A 61-year-old female, PB, presented for a routine follow-up appointment in August 2018 at a private psychiatric hospital. PB was accompanied by a carer as she is intellectually disabled and residing in an assisted living facility. PB has a complex history of schizophrenia, frontal lobe epilepsy, and obstructive sleep apnoea. Detailed medical records have been kept throughout the patient's lifetime.

The patient's medical history can be followed back to 1961, when she was admitted to hospital for a frontal lobe abscess of unknown aetiology. An exploratory craniotomy revealed a space occupying lesion and subsequently the pus was drained. During the first post-operative week, additional aspirations were performed via a frontal burr hole. The patient's medical records detailed the presence of a frontal lobe scar following the abscess drainage.

Later medical records describe developmental disabilities following the abscess removal. A gradual cognitive decline is noted along with the progression of "aggressive outbursts" and reported "social isolation". Over time she became further withdrawn, demonstrating a lack of interest in social engagement, poverty of speech, and apathy. She was diagnosed with paranoid schizophrenia and started on risperidone 1 mg BD in 2003. However, this dose of risperidone

was ineffective as PB was reported to be "talking to herself," and assaulted a staff member at her group home. Subsequently, her risperidone was increased to 2 mg BD. Records then show the addition of chlorpromazine 200 mg BD in 2004 which resulted in a reduction of her symptoms. Seizures were reported in 2006 and valproate 500 mg was prescribed to control epileptic episodes.

PB, remained on this treatment regime for her psychiatric issues. Irritability and psychotic exacerbations were noted, but she remained relatively stable on this treatment plan. In 2011, the presence of oculogyric crises (OGC) was noted. This was attributed to risperidone and the dose was lowered to 1 mg BD. The lower dose lead to an alleviation of her oculogyric crises, however there was a re-emergence of paranoia. Subsequently, her risperidone was up-titrated back to 2 mg BD. This process of down- and up-titration suggests a direct causal relationship between risperidone and oculogyric crises.

At an appointment with the patient's general practitioner (GP) in February 2018, PB's carer described episodes of unpleasant loud snoring along with a perceived overall decline in quality of sleep noted by daytime lethargy. These symptoms were attributed to obstructive sleep apnoea and the patient was prescribed CPAP. Three weeks after initiating CPAP, an improvement in PB's overall mood and energy was noted by the GP. Risperidone and chlorpromazine were reduced to 1 mg nocte, and 100 mg BD, respectively, in early March. This reduction in medication lead to the first remission of her oculogyric crises since it began in 2011. Additionally, carers at her assisted living facility reported less irritability and fewer signs of paranoia in PB. PB's story demonstrates that treating comorbidities, such as OSA, in individuals with a psychotic illness may reduce their reliance on high-dose polypharmacy and consequently reduce the burdensome adverse effects that these medications have on day-to-day functioning.

Discussion

Current approaches towards the phenomenology of schizophrenia emphasize its complex biopsychosocial aetiologies [2]. It is important to note that because of the high prevalence of comorbid disorders among people with schizophrenia, most studies have been inconclusive in determining whether or not specific comorbidities are a consequence of pre-existing psychotic symptoms rather than a cause [3]. Pertinent to this case, a recent study in Western Australia found that of people with an intellectual disability, nearly 5% had co-occurring schizophrenia. [4]. Additionally, functional imaging scans of patients with schizophrenia showed the presence of altered prefrontal fibers along with decreased frontal white matter mass [5]. When looking at patient PB; it is difficult to ascertain whether or not either the frontal lobe abscess, craniotomy, or intellectual disability were a root cause or independent factors from her schizophrenia. Regardless, these factors play into the broader context of current approaches to schizophrenia by revealing the absence of a specific cause to be adjusted. There is, rather, a necessity to holistically manage not just the positive or negative symptoms of schizophrenia, but the individual patient [6].

Oculogyric crisis is a dystonic reaction consisting of spastic deviations of the eyes, most commonly upward, lasting for a few minutes to many hours [7]. OGC is a rare, but severe

adverse effect of antipsychotics [8]. Once classically associated with first generation antipsychotics, recent literature has revealed a greater number of cases of patients on second generation antipsychotics experiencing extrapyramidal side effects than anticipated [8,9]. In line with the case of patient PB, a previous study found the emergence of OGC in those with developmental disabilities [10]. In the study of forty participants, two had experienced OGC while another two developed dyskinetic movements; it is worth noting that both side effects ceased with the withdrawal of risperidone [10]. Despite this adverse effect, risperidone has still been proven to be one of the most effective treatments for those with developmental disabilities, especially those displaying aberrant behaviors [11].

Obstructive sleep apnoea is a chronic condition characterized by recurrent episodes of upper airway collapse leading to a reduction in airflow and gas exchange during sleep [12,13]. The prevalence of OSA has proven to be difficult to calculate due to underdiagnosis in community-based psychiatric patients [14]. Despite this limitation, it has been estimated that the co-occurrence of OSA in people with schizophrenia is particularly high, with one study finding that among those with severe sleep apnoea, 31% had schizophrenia compared with 19% in the general population [15]. Further, those with schizophrenia are estimated to have a 16-18 year reduction in life expectancy due to cardiovascular disease, with OSA being a risk factor for hypertension, diabetes, stroke, and heart failure [16,17]. Additionally, the high rates of obesity, tobacco smoking, alcohol consumption, and the use of antipsychotic medications among people with schizophrenia are believed to pose an increased risk for OSA [18-21]. A pilot study of 104 patients, found that the treatment of OSA with CPAP in patients with schizophrenia led to an improvement in quality of life [22]. Leading hypotheses surrounding the phenomenology of this correlation point towards the multifactorial benefits of CPAP: after six months of treatment the study showed improvements in cognition, weight loss, reduction in blood pressure, and increased rapid eye movement (REM) sleep [22]. It is believed that CPAP causes these myriad effects by reducing daytime lethargy and improving cognitive function, giving individuals the energy to live a more active and healthier lifestyle [23]. This becomes ever more important in people with schizophrenia as cognitive impairment is a hallmark of schizophrenia and neurodevelopmental changes are present, further debilitating sufferers from their premorbid condition [1]. Therefore, this improvement in cognitive function may lead to higher overall function, lessening the burden of disease. A retrospective cohort study of 284 patients showed that there were not any statistical differences (33.6% v. 33.3%) among patients with psychiatric illness and those without regarding their ability to tolerate CPAP titration in the treatment of OSA [24]. While the preceding studies demonstrated the efficacy of CPAP treatment, this study shows the lack of precluding factors that would prevent using CPAP treatment in those with a concurrent psychiatric illness [22,23,24].

With treatment of their OSA, our patient displayed a reduction in psychotic symptoms and remission of adverse effects of risperidone, namely OGC. OSA may be potentially under-recognized in people with schizophrenia and further research is necessary to determine the relationships between antipsychotic medications and OSA. Clinicians should consider exploring the presence of OSA in their patients with schizophrenia, as treating OSA may reduce their dependence on high-dose medication and thus reduce the risk of extra-pyramidal side effects.

Furthermore, this report highlights the need to consider the patient more holistically, taking into account broader biopsychosocial factors in treatment.

Consent Declaration

Informed consent was obtained from the patient for publication of this case report.

Conflicts of Interest

None declared.

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