Available online at www.sciencerepository.org

Science Repository

Case Report

Maintenance Electroconvulsive Therapy Meeting Unmet Needs of Antipsychotics in Older Patients: A Case Report

Sharmilla Kanagasundram*, Tan Chow Hock, Lee Wen Pei and Ishwary Damodaran

Department of Psychological Medicine, University Malaya, Malaysia

ARTICLE INFO

Article history:
Received: 28 April, 2020
Accepted: 11 May, 2020
Published: 15 May, 2020

Keywords:
Antipsychotics
unmet needs
maintenance ECT
elderly
schizophrenia

ABSTRACT

This case report highlights problems encountered by psychiatrists when treating a 68-year-old female patient who presented with a first episode of psychosis. She suffered from constipation, an anticholinergic side effect of quetiapine and both anticholinergic and extrapyramidal side effects of olanzapine. Finally, she was able to tolerate a combination of two pharmacologically different antipsychotics namely olanzapine and aripiprazole combined with a course of ECT followed by maintenance ECT. The authors would like to highlight maintenance ECT as part of the solution to patients who find it difficult to tolerate antipsychotics. Especially when only low doses of antipsychotics can be tolerated by the patient.

Introduction

Antipsychotics are associated with various side effects as they act on multiple receptors [1]. Side effects and efficacy of each antipsychotic are mutually exclusive entities. A patient who is afflicted with side effects does not necessarily enjoy the benefits of the drug. When it comes to treating elderly patients who may need antipsychotics, we need to exercise caution as many patients may have comorbid conditions, be on concomitant medications and possibly have reduced ability to clear medications from their body which is a natural accompaniment of advancing age [2]. Two thirds of elderly subjects are said to show age-related decline of renal function [2]. However, despite ageing, activities of cytochrome P450 enzymes are preserved [2]. It is also noteworthy to add that genetically predetermined factors contribute to genesis of side effect genesis more efficiently than age [2].

In the elderly a large inter individual variability in drug disposition is obvious. There is much complexity of interactions between comorbidity, polypharmacy, and age-related alterations in pharmacokinetics. Here we describe the story of a 68-year-old Chinese female patient who presented with a first episode of psychosis and who was treated unsuccessfully with a few different antipsychotics before we found a suitable combination. Her treatment finally was resolved with low doses of 2 different antipsychotics with different pharmacological profiles at low doses. We also added electroconvulsive therapy (ECT) followed by maintenance electroconvulsive therapy (M-ECT).

Case Report

The patient presented with 6 months of feeling anxious, having poor sleep and almost jumped off a balcony for which she refused to give any explanation other than she was afraid. At one point she was so afraid that she almost cut off her ear lobe with a knife. Initially she denied having any delusions or hallucinations. She had poor eye contact, was not forthcoming and suspicious during all interviews, frequently refusing even to be interviewed. In addition, she had gross tremors of upper limbs despite never having been on any antipsychotic. She was also fidgety and kept shuffling her feet restlessly. After a few days in the ward while she was actively hallucinating, she finally admitted to seeing a face on the ceiling. During this episode there were no memory problems. Since the onset of illness, she had not been able to go to work. She was subsequently diagnosed to be suffering from schizophrenia.

Correspondence to: Sharmilla Kanagasundram, Department of Psychological Medicine, University Malaya, Malaysia; Tel: 60173368111; E-mail: sharmilla_kanagasundram@yahoo.com

http://dx.doi.org/10.31487/j.GGR.2020.01.06

Her blood results were normal. Her CT scan showed age related cerebral atrophy. She had hypertension for the last 10 years for which she was on metoprolol 100 mg om and 50 mg on as well as 100 mg of losartan. She has no other medical problems and no family history of psychosis. She is a single lady who had been working for close to 40 years for a company where she held a high-level administrative job. She fell ill due to work related issues. Pre morbidly she liked to go shopping but lacked close friends other than family members. She is extremely close to her siblings and spends a lot of time with them. She was initially treated with quetiapine up to a dose of 500 mg but developed constipation. Quetiapine was replaced with olanzapine 20 mg with minimal improvement in constipation. In addition, she developed extrapyramidal symptoms.

The dose of olanzapine was reduced to 10 mg and aripiprazole 5 mg was added, supplemented with benzhexol 2 mg whenever required. Her constipation resolved once the quetiapine was stopped. She was also given a course of bilateral ECT while in the ward. She also does not have any EPS with the reduced dose of olanzapine. She was continued on maintenance ECT (M-ECT) after discharge. M-ECT was started one week after the last treatment in the stabilization period using a tapering schedule, starting with M- ECT treatments at weekly intervals for 1 month (4 treatments), then every 2 weeks for 2 months (4 treatments) and with monthly intervals thereafter.

Discussion

The main focus of this case report was to highlight the benefits of ECT and then M- ECT in elderly patients who are unable to tolerate emergent side effects because of a higher dose of antipsychotics. ECT is known to be a useful tool for a wide range of psychotic disorders, including treatment-resistant schizophrenia [3]. We felt that since this patient was very sensitive to antipsychotics as she developed side effects even at low doses that were too low to fully treat her psychosis.

Due to her age, the patient was first put on quetiapine an atypical antipsychotic. Atypical antipsychotics do not consist of a homogeneous class, and those variations in side effect profile should be taken into account by clinicians when choosing antipsychotics for each patient [4]. Many atypical antipsychotics contribute to anticholinergic side effects especially in the elderly. These problems include constipation, dry eyes, dry mouth, tachycardia, difficulty to pass urine, memory impairments, agitated behavior, paranoia and possibly delirium [5]. A higher chance of anticholinergic burden has been associated with older age, being female, polypharmacy, having medical co-morbidities, having frequent visits to the hospital and using various health related facilities [6]. Dan *et al.* found that in a year nearly 60% of the nursing home inhabitants and 23% out patients received anticholinergic drugs [7].

Both olanzapine and quetiapine show dose-dependent increases in anticholinergic activity (AA). At their therapeutic doses, the AA (in pmol/mL of atropine equivalents) was estimated to range from 27-250, 1-15, and 0-5.4 pmol/mL for clozapine, olanzapine, and quetiapine, respectively. Olanzapine's antagonism of muscarinic M1-5 receptors may explain its anticholinergic-like manifestations [8]. We chose olanzapine over quetiapine due to its slightly greater efficacy at reducing psychosis [9]. Olanzapine at a low dose of 10 mg daily was insufficient to treat the psychosis. Hence, we added aripiprazole 5 mg to the regimen. Other antipsychotics such as aripiprazole, risperidone, and ziprasidone do not possess AA. Hence this is one of the reasons that we combined olanzapine with aripiprazole as the latter drug is devoid of any AA activity and so would not aggravate the constipation issue. In addition, the mechanism of action of aripiprazole differs from olanzapine [10].

Anticholinergic drugs are generally used to treat extrapyramidal side effects (EPS) or prevent EPS induced by antipsychotics [11]. In this case the antipsychotic that caused EPS was aripiprazole. We additionally gave the patient benzhexol to be used whenever necessary. As our patient was not fully well a course of ECT was given. It has been close to 80 years since its introduction but ECT is still regarded as a very effective treatment in psychiatry [12]. It is effective for mood and psychotic conditions and is a treatment option when drugs and psychotherapy alone are not alleviating symptoms. ECT has been known to act through alterations in increasing neuroplasticity, increasing levels of various neurotrophic factors as well as neurotransmitters, augmenting immune mechanisms, neuroendocrine function as well as influencing epigenesis [13]. A year later, the patient remains well despite the M-ECT had been stopped after 8 months. M-ECT is considered to be an effective way of treating and preventing relapses in patients with major psychiatric disorders who have shown good response to an initial course of ECT [14].

I Strengths

i. The patient lives with her family members who strictly supervise her medication.
ii. The patient herself was willing to take the medication and was able to accurately and freely describe her side effects.
iii. The same psychiatrists treated the patient throughout the illness.

II Limitations

i. The patient had comorbid medical condition of hypertension and she was on metaprolol and losartan which may have caused interactions with her antipsychotics.
ii. The preexisting age and hypertension related cerebral changes may have contributed to the clinical picture.

Conclusion

Employing treatments with different mechanisms of action and side effect profile is useful especially in treating geriatric patients. M-ECT can complement low doses of antipsychotics in the geriatric population.

Acknowledgement

We would like to thank the patient for allowing us to use her experiences.

Author Contributions

SK, TCH, LWP, ID were involved in conceptualizing and designing the article, preparations and approval of the final draft.

REFERENCES

1. Seeman P (2002) Atypical antipsychotics: mechanism of action. *Can J Psychiatry* 47: 27-38. [Crossref]
2. Shi S, Klotz U (2011) Age-related changes in pharmacokinetics. *Curr Drug Metab* 12: 601-610. [Crossref]
3. Ali SA, Mathur N, Malhotra AK, Braga RJ (2019) Electroconvulsive Therapy and Schizophrenia: A Systematic Review. *Mol Neuropsychiatry* 5: 75-83. [Crossref]
4. Alp Üçok, Wolfgang Gaebel (2008) Side effects of atypical antipsychotics: a brief overview. *World Psychiatry* 7: 58-62. [Crossref]
5. Carnahan RM, Lund BC, Perry PJ, Pollock BG, Culp KR (2006) The anticholinergic drug scale as a measure of drug-related anticholinergic burden: associations with serum anticholinergic activity. *J Clin Pharmacol* 46: 1481-1486. [Crossref]
6. Jun K, Ah YM, Hwang S, Chung JE, Lee JY (2020) Prevalence of anticholinergic burden and risk factors amongst the older population: analysis of insurance claims data of Korean patients. *Int J Clin Pharm* 42: 453-461. [Crossref]
7. Dan G, Blazer II, Charles FF ,Wayne A R, William S (1983) The risk of anticholinergic toxicity in the elderly: a study of prescribing practices in two populations. *J Gerontol* 38: 31-35. [Crossref]
8. Chew ML, Mulsant BH, Pollock BG, Lehman ME, Greenspan A et al. (2006) A model of anticholinergic activity of atypical antipsychotic medications. *Schizophr Res* 88: 63-72. [Crossref]
9. Samara MT, Klupp E, Helfer B, Rothe PH, Schneider-Thoma J et al. (2018) Increasing antipsychotic dose versus switching antipsychotic for non-response in schizophrenia. *Cochrane Database Syst Rev* 5: CD011884. [Crossref]
10. de Bartolomeis A, Tomasetti C, Iasevoli F (2015) Update on the Mechanism of Action of Aripiprazole: Translational Insights into Antipsychotic Strategies Beyond Dopamine Receptor Antagonism. *CNS Drugs* 29: 773-799. [Crossref]
11. Ogino S, Miyamoto S, Miyake N, Yamaguchi N (2014) Benefits and limits of anticholinergic use in schizophrenia: Focusing on its effect on cognitive function. *Psychiatry Clin Neurosci* 68: 37-49. [Crossref]
12. Petrides G, Tobias KG, Kellner CH, Rudorfer MV (2011) Continuation and maintenance electroconvulsive therapy for mood disorders: review of the literature. *Neuropsychobiology* 64: 129-140. [Crossref]
13. Singh A, Kar SK (2017) How Electroconvulsive Therapy Works? : Understanding the Neurobiological Mechanisms. *Clin Psychopharmacol Neurosci* 15: 210-221. [Crossref]
14. Lohr WD, Figiel GS, Hudziak JJ, Zorumski CF, Jarvis MR (1994) Maintenance electroconvulsive therapy in schizophrenia. *J Clin Psychiatry* 55: 217-218. [Crossref]