Lessons of the month 2: Olanzapine-induced hypothermia and hand oedema

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ABSTRACT

Introduction

We describe a case of olanzapine-induced hypothermia and hand oedema in an older adult with behavioural and psychological symptoms of dementia (BPSD).

Case presentation

An 82-year-old woman with hypothyroidism and dementia was reviewed by the geriatric team at a nursing home in view of lethargy and an unrecordable oral temperature. She was noted to have a bilateral hand oedema and right basal crackles. Investigations revealed high white cell count and inflammatory markers. She was treated as per hypothermia and communityacquired pneumonia protocols. The patient did not have the expected response to treatment. Olanzapine was tailed down and stopped with good effect as it was suspected to be a contributory cause to both the hypothermia and oedema.

Discussion and conclusion

Potentially inappropriate polypharmacy can be specifically targeted with effective deprescribing. Treatment review should be encouraged on a regular basis, especially in frail older adults with polypharmacy.

KEYWORDS: olanzapine, hypothermia, oedema, polypharmacy, deprescribing

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Introduction

Olanzapine is an atypical antipsychotic commonly used in older adults with behavioural and psychological symptoms of dementia (BPSD). We describe an unusual case of drug-induced hypothermia and oedema resulting around 3 years after medication initiation and without any subsequent dose adjustment.

Case presentation

An 82-year-old woman with a history of hypothyroidism, hypertension, congestive heart failure and dementia with behavioural symptoms, residing in a nursing home with 24-hour medical cover. She was seen by the geriatric team in view of lethargy and an unrecordable oral temperature.

On examination she was found to be lethargic with a rectal temperature of 33°C. Auscultation revealed right basal crackles. She was managed for a hypoactive delirium secondary to hypothermia associated with pneumonia. Urgent blood investigations were taken. She was kept nil by mouth, covered with a space blanket and given intravenous warm fluids and antibiotics. She was otherwise haemodynamically stable. Results revealed raised white cell count (WCC) and inflammatory markers; with normal kidney and thyroid function tests, and normal protein and albumin. A chest X-ray (CXR) confirmed right basal consolidation.

Clinically, she remained lethargic and, as time went by, she was noted to have increasing bilateral hand oedema. It was assumed to be secondary to multiple insertion of intravenous accesses and intravenous fluids. The rate of intravenous fluids was reduced and she was given a low dose of diuretics.

On day 4, her hypothermia resolved and she improved clinically. Review by a speech and language pathologist allowed the patient to start on oral trials. However, as soon as the warm fluids were stopped, her core body temperature started to drop. Warmed fluids and a space blanket were re-administered. While she became more alert, she was developing worsening generalised oedema. Kidney function and albumin levels remained within normal limits.

Her treatment was reviewed and it was noticed that she was on 5 mg olanzapine at night. This had been prescribed 3 years previously for BPSD, without change in dose. The drug was tailed down and stopped over 4 days. On stopping it, her core body temperature normalised and remained stable even after stopping the hypothermia protocol. Her oedema resolved within a few weeks.

Results

This case describes the uncommon side effects of hypothermia and oedema in an older adult prescribed olanzapine. After stopping the drug, she did not have further episodes of hypothermia or hand oedema.

Discussion

Hypothermia is defined as a core body temperature below 35°C. It is commonly associated with prolonged exposure to low ambient temperatures, hypothyroidism, malnutrition and sepsis. Typical

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and atypical antipsychotics are well known to cause hypothermia. Risperidone is commonly associated with this side effect. The World Health Organization (WHO) added that schizophrenia itself is the most common psychiatric condition associated with hypothermia.[1]

The mechanism by which atypical antipsychotics are believed to cause hypothermia is complex. It involves antagonism on D2 dopamine receptors and 5-HT2 serotonin receptors. Olanzapine in particular has a higher affinity to 5-HT2 serotonin receptors.[1]

There are a few such case reports in the literature, however, this is mostly with initiation or dose adjustment. There has been one reported case similar to ours of an 83-year-old woman with hypothermia induced by a therapeutic dose of olanzapine.[2] There was also an earlier report of a 42-year-old man who was being treated for schizophrenia.[3] This might have been a confounding factor or additional contributing cause of hypothermia.[1]

Zonnenberg and colleagues described five cases of hypothermia induced by drugs, namely clozapine, haloperidol, olanzapine, penfluridol, risperidone and zuclopenthixol.[4] There have also been reports of olanzapine-induced peripheral and facial oedema.[5,6]

Our patient had a number of risk factors, including controlled hypothyroidism and diabetes mellitus. Her blood investigations were normal except for raised WCC and inflammatory markers. In this scenario, the patient might have been hypothermic and developed oedema secondary to the drug itself as these resolved on stopping the drug. Pneumonia may precipitate hypothermia in some cases. One should appreciate the complexity of older adults with multiple medical comorbidities.

Potentially inappropriate polypharmacy (PIP) occurs when more drugs are prescribed than is necessary, having unacceptable side effects, wrong dosages and/or having harmful interactions.[7] In our case, olanzapine was clinically no longer indicated as the patient's dementia had advanced and was no longer exhibiting BPSD. Deprescribing, withdrawal of PIPs, has the goal of reducing pill burden and improving clinical outcomes. There are various deprescribing tools, including the Screening Tool of Older Persons' Prescriptions (STOPP) criteria.[8]

Conclusion

Treatment should always be reviewed, especially in older adults with PIP, as their clinical condition may not be improving because of adverse drug effects. In our case, the patient remained well off antipsychotics, without further episodes of oedema and hypothermia. Effective deprescribing was the key to the patient's management.[7,8] ■

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