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

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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 community-acquired 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

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
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.\(^1\) 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.\(^7,8\)

**References**