Myoclonus – Not always part of the ‘opioid epidemic’: A case report of lithium toxicity mimicking opioid toxicity.

Hennelly C, Twomey M, O’Reilly, M.

Specialist Palliative Care Service, St. Luke’s Radiation Oncology Network, St. Luke’s Hospital, Oakland Drive, Highfield Road, Dublin 6.

Background

- During life limiting illness or at the end of life patients are at their most frail, but increasing symptoms often necessitate increasing numbers of medications.1

- Previous research has shown that patients at the end of life are taking, on average, five medications.2 This number increases as death approaches3 with symptom-specific medication accounting for 49%.3

- Potentially intolerable side effects of opioids include myoclonus and neurotoxicity.

- Lithium is a mood stabiliser with a narrow therapeutic index used to treat mania and major refractory depressive episodes. It too is neurotoxic at supratherapeutic levels.

Management and Outcomes

- The patient’s NSAID was discontinued and an urgent lithium level was obtained. Lithium was withheld and the patient hydrated.

- The previously normal lithium levels were now supratherapeutic having increased by 100% (1.24mmol/L).

- As levels fell there was a marked improvement in the patient’s manifestations of toxicity. Lithium was reintroduced as levels returned to normal. Pain was managed with palliative radiotherapy and opioids.

Discussion

- A number of drug-drug interactions between lithium and other medicines, including NSAIDs are well recognised and can increase lithium levels resulting in neurotoxicity4,5. This can mirror opioid toxicity clinically.

- Drug interactions can involve drugs and chemicals in the environment, drugs and nutrients and drug-drug interactions.7 Drug interactions are divided into three groups depending on the underlying mechanism of interaction:8

  - Pharmacodynamic
    - A pharmacodynamic interaction results from combining two drugs with similar mechanisms of action, which may behave in a synergistic, additive, or antagonistic manner.

  - Phamacokinetic
    - A pharmacokinetic interaction occurs when a drug alters the absorption, distribution, metabolism (often due to interaction with the cytochrome P450 (CYP) hepatic enzymes), and/or excretion of another medication.

  - Pharmaceutical
    - A pharmaceutical interaction occurs when mixing chemically incompatible drugs outside body, e.g. incompatibility of phenobarbital & opioid analgesics when mixed in the same syringe, resulting in inactivation of one or both drugs.

- Patients referred to specialist palliative care services are a group with a unique number of risk factors for potential drug-drug interactions.

- Previous retrospective reviews have found that greater than 70% of patients referred to specialist palliative care services were at risk of potential drug–drug interactions.8,9

- The potential for a drug-drug interaction does not always equate to an adverse event and the risk of potential interaction may be recognised as an acceptable one when prescribing patients referred to specialist palliative care services.

Conclusions

1. Myoclonus is not an exclusive consequence of opioid toxicity and other potential causes of neurotoxicity should be considered.

2. Drugs with narrow therapeutic indices need close supervision when doses are changed. New medications should be introduced with caution.

3. Patients referred to specialist palliative care services have many risk factors for potential drug-drug interactions.

References


