

Case Discussion: A Case of Hypercalcaemia Mimicking Opioid Toxicity

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Here we present a case of hypercalcaemia mimicking opioid toxicity. This is a 50 year old lady with a neuroendocrine tumour who presented with worsening back pain, thoracic wall pain, constipation, fatigue, confusion and nausea. Her regular morphine dose had recently been increased and she was initially admitted to hospice for management of these symptoms, which were believed to be due to opioid toxicity. However, investigations showed hypercalcaemia and she was treated adequately for this. Her symptoms were well controlled, although she continued to deteriorate due to the underlying malignancy and she remained on opioids for her end-of-life pain management. Hypercalcaemia and opioid toxicity have several overlapping symptoms, including fatigue, confusion, nausea and vomiting, constipation and abdominal pain. However there are specific signs and symptoms to help distinguish the two. Specifically, opioid toxicity can cause respiratory depression, miosis and myoclonic jerks while hypercalcaemia can cause bone pain, renal colic, arrhythmias, polyuria and polydipsia. Therefore attention should be paid to these specific features on assessment of patients and blood tests should be done if there is any uncertainty.

constipation, tiredness and confusion. It was only with the laboratory results showing hypercalcaemia that the true culprit was identified. Here, we shall discuss the signs and symptoms of hypercalcaemia, opioid toxicity, and the specific features that help distinguish the two.

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Hypercalcaemia is most commonly caused by primary hyperparathyroidism and malignancy-associated hypercalcaemia, the latter of which is prevalent in palliative medicine and could account for about 38% of acute presentations of hypercalcaemia [1]. Additionally, hypercalcaemia has been reported to present in up to 10-30% of cancer patients at some point in their illness [2]. The pathogenesis of malignancy-associated hypercalcaemia has been shown to be due to (1) the production of parathyroid hormone-related peptide, which can bind to parathyroid hormone receptors and thus mimic its function, (2) increased bone resorption in the cases of metastatic bone disease, and (3) ectopic hormone secretions [3].

Symptoms of hypercalcaemia are protean, encompassing a variety of gastrointestinal, renal, neuromuscular and cardiovascular manifestations. The severity of the symptoms ranges from asymptomatic to life-threatening and may vary depending on the chronicity of the problem and the degree of increase in serum concentration of calcium. Common symptoms including bone pain, drowsiness, impaired cognition, muscle weakness, nausea and vomiting, constipation, renal colic due to renal stones, polyuria and polydipsia, and arrhythmias.

The National Institute for Health and Care Excellence (NICE) recommends the administration of intravenous fluids and bisphosphonates as the treatment for hypercalcaemia in known malignancies [4]. Other treatments include the use of calcitonin, denosumab, calcimimetics and dialysis.

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Strong opioids are commonly used in the management of pain in advanced, life-limiting cancers. Opioids bind to and activate the mu,

7. Bruera E, Suarez-Almazor M (1995) Opioid rotation for toxicity reduction in terminal cancer patients. *J Pain Symptom Manage* 10: 378-384.