PALLIATIVE CARE NETWORK OF WISCONSIN

FAST FACTS AND CONCEPTS #57
NEUROEXCITATORY EFFECTS OF OPIOIDS: PATIENT ASSESSMENT

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Background Everyone recognizes the common opioid side effects: constipation, nausea, pruritis, and urinary retention. Less well appreciated are the neuroexcitatory effects, commonly seen among patients on chronic opioids. Among these, myoclonus is typically the herald symptom. This *Fast Fact* will discuss risk factors and patient assessment of the neuroexcitatory opioid side effects, particularly myoclonus; *Fast Fact* #58 will discuss treatment options.

Physiology and Risk Factors Myoclonus can occur in patients on chronic therapy with most opioids including morphine, hydromorphone, fentanyl, meperidine, and sufentanil. Higher doses more frequently result in myoclonus, but the dose relationship is variable. Myoclonus can occur with all routes of administration. Current research implicates the 3-glucuronide opioid metabolites as one likely cause of neuroexcitatory side effects with some suggestion that symptoms may not develop until a neurotoxic threshold is surpassed, although current understanding is limited. Co-morbid factors including renal failure, electrolyte disturbances, and dehydration can also contribute to myoclonus development.

Clinical Scenarios Myoclonus – the uncontrollable twitching and jerking of muscles or muscle groups – usually occurs in the extremities, starting with only an occasional random jerking movement. A patient's spouse may be the first to recognize this symptom. With continued administration, the jerking may increase in frequency; at the extreme, there is constant jerking of random muscle groups in all extremities. As myoclonus worsens, patients may develop other neuroexcitatory signs: hyperalgesia (increased sensitivity to noxious stimuli), delirium with hallucinations, and eventually grand mal seizures. Well meaning clinicians may misinterpret the hyperalgesia as increasing pain, leading to a vicious cycle of increasing dose, increasing hyperalgesia, increasing dose, worsening delirium, and finally seizures. After identifying a patient with possible opioid toxicity, the clinician should complete a physical examination and chart review.

Physical Examination

- Assess frequency of myoclonic jerks. Stand at the bedside and observe a patient for 30-60 seconds. Watch for and count the number of uncontrolled jerking movements.
- Determine if there is evidence of a new or worsening delirium. Complete a bedside mini-mental assessment.
- Assess hydration status.
- Estimate prognosis: hours, days, weeks, months or years? A longer prognosis demands a more definitive change in treatment.

Chart review

- Review the recent opioid analgesic history. What is the current drug and dose? How has the dose changed over the past few days and weeks?
- Review the medication list for potentially exacerbating drugs. (e.g. haloperidol, phenothiazines)
- Review recent laboratory studies if available. Check renal and liver function, and for low magnesium, glucose or sodium.

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