



PALLIATIVE CARE

CASE OF THE MONTH

Opiate Dosing for Respiratory Distress



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Case: LH was a 68 year-old retired construction and steel mill worker diagnosed with small cell lung cancer in the fall of 2006 and idiopathic pulmonary fibrosis (IPF) that became rapidly progressive after he received radiation and chemotherapy for his cancer that December. LH was first diagnosed with right lower lobe endobronchial small cell lung cancer in fall 2006. He completed chemotherapy in December 2006 and he and his family looked forward to a hoped-for period of improvement/quality time in 2007.

Unfortunately he experienced increasing dyspnea on exertion over the 2 months following his cancer therapies. His breathlessness continued to progress to the point of dyspnea at rest and he was readmitted to his local hospital in late April and then transferred to our hospital when it became apparent that his IPF had progressed so drastically that the local hospital had no effective therapies. Work-up at that hospital confirmed absence of infection or PE, but suggested his prior IPF had progressed dramatically. Specialists there recommended no other options for disease-modifying care, and he was transferred to our hospital already on bi-pap for a second opinion. He was receiving small dose Morphine (1mg IV every 4h prn) for pain/respiratory distress and Ativan (0.5mg IV q8h prn) with limited relief. Specialists at our center confirmed that he had no other options. They did not feel he could withstand transplant, and were trying extreme high-dose steroids as a last chance for limited symptom relief.

Palliative Care (PC) Consultation

Even prior to his current increase in symptoms, LH had been clear about his advanced directives. He had had repeated conversations with his wife, family, and primary medical team regarding his wishes not to undergo CPR or intubation. When our Palliative Care team was consulted these directives were already in place. He and his family had allowed bi-pap (and IV medication supports if needed) as a temporary measure while they waited to see if high-dose steroids provided any improvement. We were consulted to help with his symptom management (dyspnea and agitation) and to support the patient and family during this stressful time.

During the first 12 hours both the family and primary team were only willing to use low-dose morphine (2mg IV q2h) and scheduling IV lorazepam q8h. Overnight LH became more short of breath, and the on-call physicians did not feel comfortable increasing his opiates since he was not completely “comfort measures only.” They also were nervous about the prospect of re-dosing before the 2 hour dose interval he had been receiving.

When we saw the patient and family in the morning, the family was upset about his difficult night. We clarified the goals for his care with all and were able to bolus dose the patient out of his distress with IV morphine repeated at 15 minute intervals until his respiratory rate was ≤ 24 /minute. Since he had not responded previously to the prior 2 mg boluses, the initial dose chosen was a 50% increase (3 mg). After 15 minutes he had only slight relief and was bolused again with an additional 50% increase (5 mg).

The 5 mg dose was needed one additional time and a continuous infusion rate was then calculated using the last 6-hour opiate use divided by 6. He was started on a 4mg/hour continuous infusion and remained comfortable and intermittently able to converse and interact with his family for much of the remaining 3 days of his life.

Summary

Many clinicians (physicians and nursing/support staff alike) are nervous about the choice of opiate dose and the interval for re-dosing particularly in critically ill and dying patients. Part of this anxiety stems from the bulk of their own prior experience (use of these medications in patients NOT at the end of life, and witnessed or anecdotal “over doses.”) In their prior training, emphasis was often placed on the dangers of re-dosing before medication half-life since this could result in excess sedation and the adverse effects that stem from that sedation.

What is of equal, and perhaps even greater, importance in the end-of-life situation is the “time to peak effect” of the medication since this determines how long it will take to reduce these (often dramatic) symptoms down to a manageable level. Time to peak effect varies by medication

For further information please contact the Palliative Care Program at PUH/MUH, 647-7243, beeper 8511., Shadyside Dept. of Medical Ethics and Palliative Care, 623-3008, beeper 263-9041, Perioperative/ Trauma Pain 647-7243, beeper 7246, UPCI Cancer Pain Service, beeper 644 – 1724, Interventional Pain 784-4000, Magee Women’s Hospital, 641-2108, beeper 917-9276, VA Palliative Care Program, 688-6178, beeper 296. For ethics consultations at UPMC Presbyterian-Montefiore, and Children’s call 647-5700 or pager 958-3844. With comments about “Case of the Month” call David Barnard at 647-5701.

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and route of administration. IV or subcutaneous morphine (or dilaudid) reaches peak within 15 to 30 minutes, while oral or sub-lingual doses take as long as 30 minutes to 1 hour.

Practically speaking, if a patient with significant pain or respiratory distress has NOT had relief after this time to peak, then waiting for the full half-life before re-dosing is not only ineffective, but inappropriate.

Appropriate use of opiates for acute symptoms in actively dying patients, really requires attention to both the half-life and the time to peak. Initial dosing should occur by loading dose boluses and should be repeated at “time to peak” intervals until the symptom is down to a manageable level (respiratory rate $\leq 24/\text{min}$, or pain level $\leq 4/10$).

Suggested initial IV morphine boluses and continuous infusion rates for (opioid naïve patients) used at our institution are as follows;

1. Morphine 2-5 mg IV with simultaneous initiation of a continuous infusion at the same rate/hr.
2. If the initial loading bolus gave only partial relief after 15 minutes; the next bolus dose should be raised by 50% and repeated every 15 minutes until symptoms are controlled.
3. Once the patients have achieved comfort, allow additional bolus doses for recurrent breakthrough pain or distress at doses equal to the last effective bolus dose given every 30 minutes as needed.
4. If more than two additional bolus doses are used over a 6-hour time span, then the continuous infusion rate should be increased by calculating the total dose given over the last six hours and dividing it by six.

For opioid non-naïve patients the choice of Morphine bolus and continuous infusion rate is as follows;

1. Calculate the equianalgesic dose of IV Morphine use over the last 24 hour.
2. Divide this dose by 24 to determine the initial hourly rate and start infusion at this rate.
3. If the patient is in pain/respiratory distress use the hourly rate as the initial bolus dose.

4. If pain/distress is not relieved after 15 minutes, increased the bolus dose by 50%, and repeat every 15 minutes until comfortable.
5. Once comfortable, allow bolus doses (equal to the last effective bolus dose) every 30 minutes as needed for breakthrough pain/distress.
6. Recalculate continuous infusion rate if using more than two bolus doses in 6 hours by summing all opiates used in past 6 hours and dividing by 6 to get the new hourly rate.

It is also helpful to remind the primary team to pass on these guidelines to covering physicians since they often do not know the patients or their situations as well, and may need additional support in caring for actively dying patients.

References

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