Buprenorphine's analgesic effect is due to partial agonist activity at mu-opioid receptors (ORs), and has very strong receptor affinity. It's also a kappa-OR antagonist. The unique activity of the drug as a partial agonist/antagonist at varying receptor sites, means that above a certain dose, employing other opioid receptor agonists as breakthrough (BT) analgesia, may perceptively be ineffective.

Studies have looked at effectiveness of morphine sulphate and other mu agonists for episodic BT pain in patients receiving transdermal (TD) buprenorphine. With typical clinical doses, it is possible to use morphine sulphate or other mu agonists without loss of analgesia. Antagonism is felt to only be a concern at very high doses. The usual doses in practice, as cited by the Palliative Care Formulary (PCF), range from 10–40 mcg/hour. Evidence suggests the phenomenon may become relevant at doses exceeding approximately 66 mcg/hour.

This is poorly studied in children to date.

Aims

- The study aim was to ascertain, of children under review by Specialist Palliative Care (SPC) in a Paediatric Hospital, who were prescribed TD buprenorphine as their background analgesia: what dose(s) were used; BT analgesia; whether above cut-off dose cited, BT analgesia changed.
- With respect to our paediatric population on the higher doses of buprenorphine, to determine if there was loss of analgesic benefit with use of opioid agonist BT.

Methods

- SPC brainstorming session.
- Literature review.
- Liaising with in–house pharmacist in relation to local prescribing trends, Meeting with SPC pharmacist.
- Data generated from pharmacy records detailing patients in question.
- Demographics collected/kardexes studied.
- Chart review with on doses above 65 mcg/hr.
- Data was collected including PRN opiate choice/dose/changes to PRN opioid corresponding with up-titration of the buprenorphine, other non-opioid analgesics/pain scores.

Results

Of 15 patients, one buprenorphine dose exceeded named cut-off dose. Oxycodeone was breakthrough analgesic, from which he derived benefit. He had experienced opioid induced hyperalgesia on TD fentanyl, prompting rotation to buprenorphine.

Conclusions

This study revealed one patient on agonists where induction of morphine sulphate on TD buprenorphine. With typical clinical doses, it is possible to use morphine sulphate or other mu agonists without loss of analgesia. Antagonism is felt to only be a concern at very high doses. The usual doses in practice, as cited by the Palliative Care Formulary (PCF), range from 10–40 mcg/hour. Evidence suggests the phenomenon may become relevant at doses exceeding approximately 66 mcg/hour.

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