

Use of buccal morphine in the management of pain in children with life-limiting conditions: Results of a laboratory study

Abstract

Background: Children and infants with impaired swallow or compromised enteral absorption require alternative routes for administration of analgesia. Recent clinical guidance and practice for paediatric palliative care teams, who often treat such children, supports buccal morphine sulphate as a fast acting, effective and easily administered agent for pain relief. However, a consideration of the physicochemical properties and potency of morphine would suggest that it is not a suitable candidate for delivery via the transmucosal route, raising questions about its use in children and infants.

Aim: To explore the permeability of buccal morphine sulphate in an established ex vivo porcine buccal mucosa as a necessary step in examining efficacy for use in children with life-limiting conditions and life-threatening illnesses.

Design: A permeation study conducted with morphine sulphate in an ex vivo porcine buccal tissue model. Flux values and pharmacokinetic data were used to calculate the plasma values of morphine that would result following buccal administration in a 20kg child.

Results: Results show that the estimated steady state plasma values of morphine sulphate following buccal administration in this model do not achieve minimum therapeutic concentration.

Conclusion: These data strongly suggest that morphine sulphate is not suitable for buccal administration and that further research is needed to establish its efficacy in relief of pain in children with life-limiting conditions and life-threatening illnesses.