The Dose Equivalency of Fentanyl and Morphine when used as Infusion for Analgosedation in Mechanically Ventilated Patients: Findings from The ANALGESIC Trial

BACKGROUND

• The dose equivalency of fentanyl vs. morphine is widely considered to approximate 100 (10 µg of fentanyl = 1,000 µg (1 mg) of morphine).

• However, such equivalency has not been measured when these drugs are used for analgosedation.

• We aimed to define the dose equivalency of fentanyl vs. morphine when used by continuous infusion to achieve the same level of analgosedation during mechanical ventilation.

METHODS

• We used data from the ANALGESIC trial of analgosedation to obtain detailed data on fentanyl and morphine dosage.

• We assessed such dosage according to cumulative dose, hourly dose, age, ideal, lean and actual body weight, body mass index (BMI), body surface area (BSA), presence of renal dysfunction and illness severity and derived dose equivalency tables.
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Casamento AJ MBBS,1,2,3 Ghosh A MBBS,2,4 Serpa Neto A PhD,1,3,5 Young M BE,3,5 Lawrence M MBBS,2 Taplin C,2 Eastwood GM PhD,1,3 O’Donnell S MB BCh BAO,2 and Bellomo R PhD.1,3,5

RESULTS

- We studied 663 patients (338 fentanyl, 325 morphine).
- Median (IQR) hourly dose of fentanyl and morphine was 58.1 (40.0-89.2) µg and 3,400 (2,200-5,000) µg respectively with a ratio of 1:59.
- This ratio was not modified using actual or ideal body weight, BMI or BSA.
- However, there were statistically significant changes in the relative potency with increasing age when comparing total dose of fentanyl and morphine per all weight scalers except LBW, with fentanyl becoming relatively less potent with increasing age.
- Renal dysfunction or illness severity did not affect dose equivalency.
CONCLUSION

• During analgosedation, the median dose equivalency of fentanyl compared with morphine is much less than widely believed and is markedly modified by age with higher levels in young patients and lower levels in older patients.

• This information can be used to guide prescription in critically ill patients.