

## 2003 Spring A40

### **Ropivacaine 0.1% with sufentanil 1 µg/ml inhibits growth of pseudomonas aeruginosa and does not promote multiplication of staphylococcus aureus**

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**Introduction:** We investigated the effect of ropivacaine combined with sufentanil, a mixture frequently used for postoperative epidural analgesia, on the growth of Staphylococcus (S.) aureus and Pseudomonas (P.) aeruginosa at room temperature.

**Materials and Methods:** Aliquots of suspension of S. aureus and P. aeruginosa in saline were transferred into test tubes containing either a mixture of ropivacaine 0.1% + sufentanil 1 µg/ml (R+S) or saline (SA), the latter serving as control. At 0, 3, 6, 24, and 48 h after inoculation 1 mL of each solution was spread over standard-blood agar. The plates were incubated at 22°C for 48 h. After 48 h of incubation at 22°C, the number of colony forming units (cfu) were counted. Growth ratio for both bacterial strains was calculated by the following quotient: cfu time ( $t_n$ ) / cfu baseline ( $t_0$ ). The primary efficacy variable was area under curve (AUC) in mm, based on the growth ratios of S. aureus and P. aeruginosa in R+S and SA. Two-tailed t-test was used exploratively to compare bacterial growth in R+S and SA at each assessment point. Significance was set at the  $p < 0.05$  level.

**Results:** The AUC for P. aeruginosa was significantly lower in R+S than in SA ( $p = 0.028$ ). Multiplication of P. aeruginosa (growth ratio  $> 1$ ) was observed for at least 6 h after inoculation in SA. Growth of P. aeruginosa was significantly lower in R+S than in SA 3 h ( $p = 0.043$ ) and 24 h after inoculation ( $p = 0.012$ ). The AUC for S. aureus did not differ significantly between R+S and SA ( $p = 0.74$ ). Neither R+S nor SA promoted multiplication of S. aureus. 48 h after inoculation growth of S. aureus was significantly lower in R+S than in SA ( $p < 0.0001$ ).

**Conclusions:** This laboratory study demonstrated that compared to saline ropivacaine 0.1% with 1 µg/ml sufentanil inhibited growth of Pseudomonas aeruginosa and did not promote multiplication of Staphylococcus aureus at room temperature. With respect to bacterial infection this mixture seems to be safe for continuous epidural administration if prepared under aseptic conditions.