

ANALGESIC INTERVENTIONS IN NEONATAL CIRCUMCISION: A NETWORK META-ANALYSIS

 **Gabriel L. González**, Gustavo R.M. Wegner, Bruno F.M. Wegner, Iaci L.L. Mattos, Catherine M.F. Werner, Fani Nhuch, Tatiana S. Nascimento

INTRO

- Circumcision is one of the most common neonatal procedure and is frequently done without analgesia;
- Pain during circumcision may have neurodevelopmental consequences;
- Neonatal pain scales present multiple limitations and many studies prefer **pain-derived physiological responses** as surrogates for pain;
- Many RCTs evaluate the role of regional and topical interventions, but there has been no study comparing all interventions in a unified framework.

METHODS

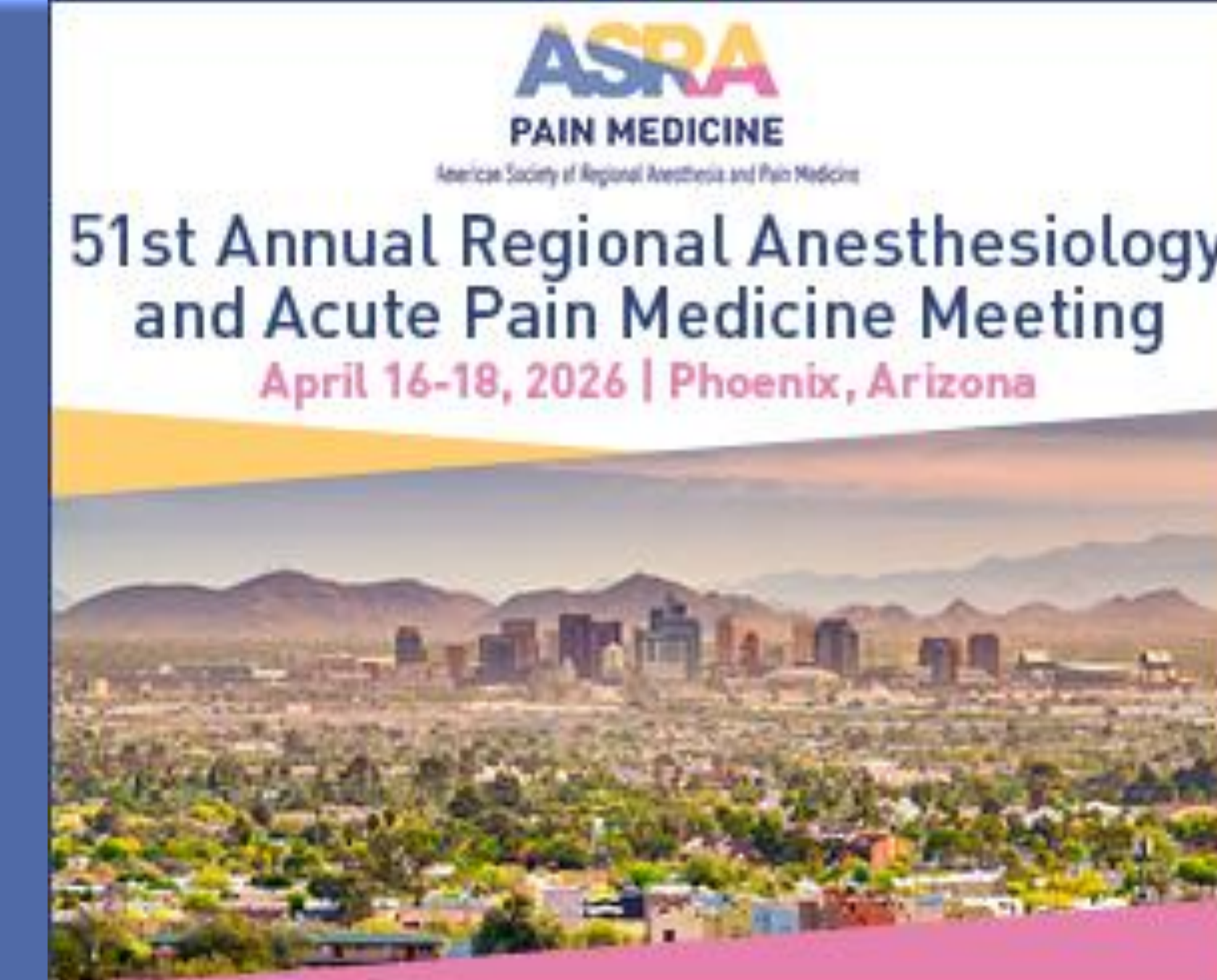
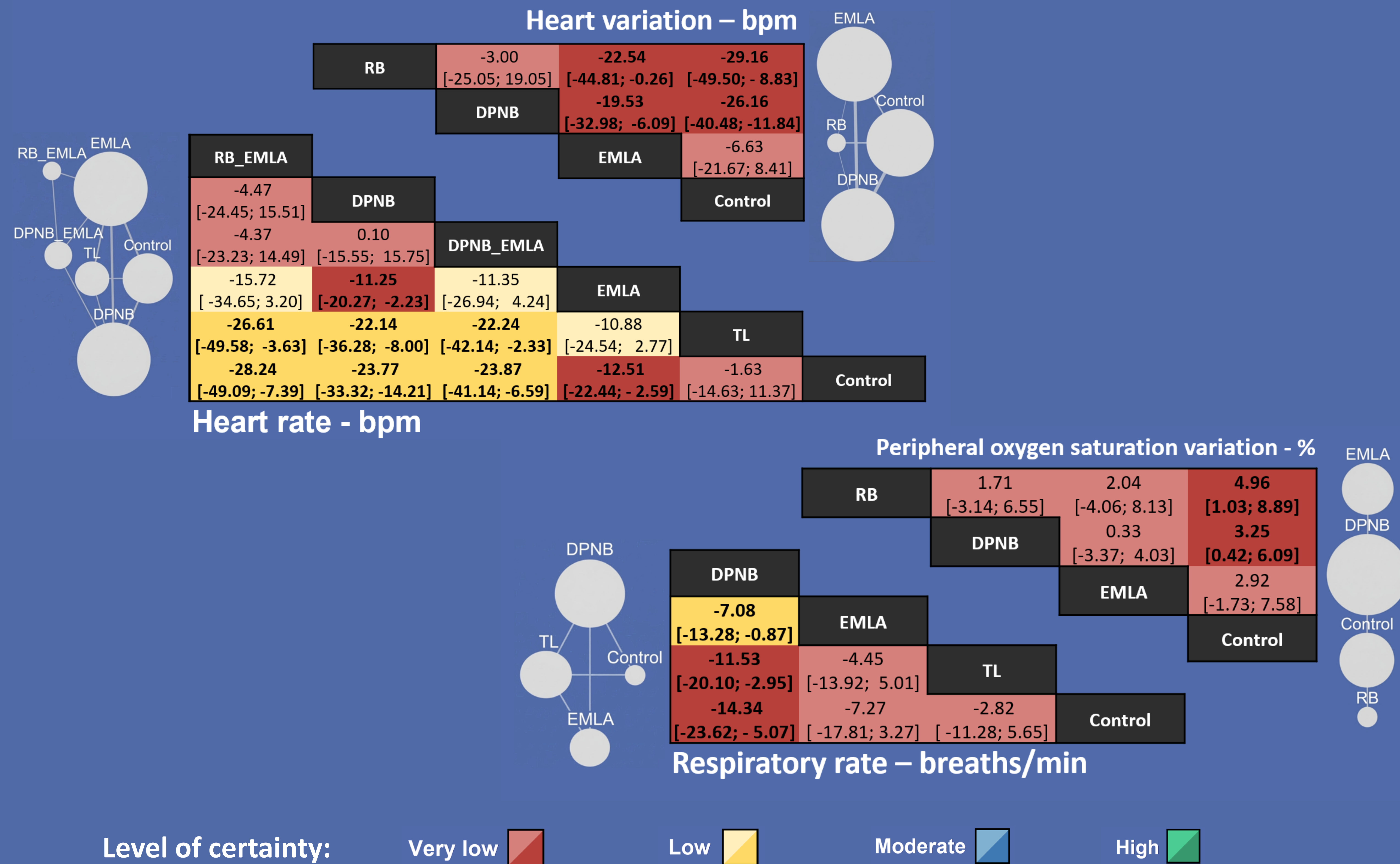
- **Frequentist network meta-analysis**;
- Outcomes: intraoperative heart rate, peripheral oxygen saturation, their variation, respiratory rate and hematoma;
- Continuous outcomes – MD;
- Binary outcomes - RR;
- **Interventions**: dorsal penile nerve block (DPNB), subcutaneous ring block (RB), topical eutectic mixture of local anesthetics (EMLA), topical lidocaine (TL), DPNB with EMLA, RB with EMLA, and no analgesia (control).



 Take a picture to
download the
extended content



Regional anesthesia provides lower pain-related intraoperative responses in neonates undergoing circumcision.



RESULTS

- 18 RCTs (1035 patients);
- **P-Score ranking** (left→right);
- Certainty of evidence with **CINeMA** framework (color graded);
- **Regional anesthesia**, with or without EMLA, and EMLA alone, **presented lower pain-related changes compared to topical or no analgesia**;
- **DPNB** showed better analgesia than EMLA, but **higher risk of hematoma**;
- Subgroup analyses with term neonates and no SD estimations were aligned with results.

DISCUSSION

- **Findings support the use of regional analgesia in neonatal circumcision**;
- EMLA presented lower heart rate than control, but did not consistently present clinical significance, thus its use should not substitute other techniques;
- Low certainty of evidence was mainly due to the indirect nature of pain assessment;
- Further limitations include reduced statistical power, sparse data, heterogeneous outcome definitions and various assessment methods.