Dexmedetomidine Reduces Post-Operative Pain Scores in Children Undergoing Image-Guided Doxycycline Sclerotherapy of Lymphatic Malformations

Sarah Moore, MD, Sang Le, MD, Suzanne Matich, Agassi Tran, Chadi Zeinati, MD, Abhishek Karnwal, MD
Anesthesiology Critical Care Medicine, Children’s Hospital Los Angeles, Sunset Blvd Los Angeles, 90027

Introduction
- Lymphatic malformations (LMs): congenital cystic lesions of the lymphatic channels (1)
- LMs > 1cm are classified as macrocystic and are treated in childhood with image-guided sclerotherapy. Doxycycline is a common and effective sclerosing agent. (2,3,4)
- Anesthetic challenges for sclerotherapy:
  - Airway issues related to LMs of head/neck
  - Procedures are brief and stimulating
  - Procedures are followed by a period of significant pain with peak intensity 1-3 hour after the sclerosing agent is injected (3) → Pain peaking in the PACU

Objective
- To determine if Dexmedetomidine was a useful adjuvant for the late-peaking, post-operative pain experienced by children undergoing image-guided Doxycycline sclerotherapy of LMs.
- Primary outcomes: PACU pain scores
- Secondary outcomes: Intra-operative opioid administration, post-operative opioid administration, sedation scores, PACU length-of-stay

Design
- Retrospective study of 152 consecutive image-guided Doxycycline sclerotherapies for macrocystic lymphatic malformations at our tertiary-care pediatric institution between 2014-2016.

Methods
- IRB approval was obtained
- Demographic data as well as primary and secondary outcomes were analyzed using the Wilcoxon-Mann-Whitney U test and reported in terms of medians and interquartile ranges to account for non-normal distribution of data.
- Cases were individually reviewed for adverse events associated with the drug administration

Results
- Of the 152 procedures, 61 patients received dexmedetomidine as part of their anesthetic and 91 patients did not.
- Median age: 2.7 years in the dexmedetomidine group, 5.6 years in the control group
- Median weight: 16.7 kg in Dexmedetomidine group, 18 kg control group
- Primary Outcome: Median pain scores for the Dexmedetomidine group were significantly lower during time of admission to the PACU, 1 hour post admission and 4-hour post admission as compared to the Control group. Pain scores 2 hours and 3 hours post admission were lower for the Dexmedetomidine group but did not achieve significance.

Conclusions
- This study demonstrates that Dexmedetomidine is an effective, well-tolerated adjuvant for multimodal analgesia in children undergoing image-guided doxycycline sclerotherapy of LMs.
- Patients who received perioperative administration of Dexmedetomidine had a primary outcome of lower PACU pain scores throughout their PACU stays as compared to those who did not, with a significant decrease seen at the time of arrival to the PACU, 1 hour after arrival and 4 hours after arrival.
- The decrease in pain is of obvious benefit to the patient but also has the effect of decreasing overall stress in the pediatric PACU environment and decreasing the burden placed on PACU nursing staff.
- There was no significant difference in intra-operative or post-operative opioid administration.
- No significant differences were seen in sedation scores.
- PACU length-of-stay times were longer in patients given Dexmedetomidine but the difference did not reach significance. This could be a relevant issues with a larger sample size.

References