

BACKGROUND

- Spinal fusion is associated with significant postoperative pain, which can be extremely difficult to manage, especially in the pediatric population.
- Intrathecal (IT) morphine has been shown to improve pain without increasing adverse effects.
- Post-dural puncture headache (PDPH) is a known risk of IT analgesia.
- Incidence of PDPH in children varies widely (1-2% - 30%)
- DelPizzo et al. recently reported a PDPH incidence of 4.9% in adolescent patients undergoing orthopedic surgery.
- Purpose of our study was to determine the incidence of PDPH after spinal anesthesia for adolescent idiopathic scoliosis surgery at Children's Hospital Colorado (CHCO).

METHODS

- After IRB approval, we retrospectively reviewed (via EPIC and REDcap) all adolescent (ages 13– 18) patients who underwent primary posterior spinal fusion with spinal analgesia between 1/1/2018 and 12/31/2021.
- Patients were excluded if no block report was documented at the time of the procedure, had known allergies to morphine, or if the case was aborted before completion of surgery.
- A diagnosis of PDPH was considered if there was a formal diagnosis in the record.
- Given low PDPH rates, Bayesian analysis was utilized. Prior distributions were modelled as non-informative Jeffrey beta priors while PDPHs were modeled as binomial random variables. The posterior distributions for the PDPHs were also beta-distributed.
- PDPH rates and the rate difference between the two groups were summarized using the posterior median and 95% credible intervals (CIs) where summaries of the rate difference were computed using a Monte-Carlo method with 100000 samples.

RESULTS

- A total of 398 patients were included in analysis. Of these patients, we found that 4 (1%) had PDPH associated with their procedure.
- The average age of the PDPH group was 14.50 years (compared to 14.29 for the non-PDPH group) and of these 4, 3 (75%) were female, and only 1 patient had a past medical history of migraines.
- All patients (100%) received conservative treatment (caffeine, fluid, NSAIDs, acetaminophen), 3 (75%) received cosyntropin, and none received a blood patch, occipital nerve blocks, or sphenopalatine blocks.
- 1 (25%) patient required readmission. The mean length of stay for all patients was 3.81 days (StDev: 1.12, median: 4). Amongst those with PDPH, the mean length of stay was 7.25 days (Median: 7, StDev 2.22).
- The size of the spinal needle ranged from 18 gauge to 27 gauge (G) with the most common size being 25 G (72.2%, 268/371).
- Within the PDPH group, 75% (3/4) were with a 25 G needle and 25% (1/4) was with a 22 G needle.

CONCLUSIONS

- PDPH incidence amongst adolescents receiving intrathecal morphine during primary posterior spinal fusion surgeries was about 1%, which is lower than currently reported rates (4.9% in adolescents receiving spinal anesthesia for supine procedures).
- PDPH incidence was higher in females than males (75%), which is consistent with current literature.
- Compared to the DelPizzo study, patients in our cohort had a 99.8% lower likelihood of developing PDPH with a rate difference posterior median of -2.3% and rate difference posterior distribution 95% CI of -4.1% to -0.6% (Figure 1).
- Morphine may be protective against PDPH.
- All the patients that had PDPH had resolution with conservative management, and none required an epidural blood patch.

IMPLICATIONS

- Intrathecal morphine is an adequate mode for analgesia in pediatric spinal fusion surgeries as it achieves sufficient pain control without increasing side effect profiles.
- The incidence of PDPH in our study (1%) was lower than previously reported rates within the adolescent population, suggesting IT morphine remains a viable mode of analgesia.

- Limitations:
- Data was obtained from one single-center, academic teaching hospital with significant resources and a high number of experienced providers.
- Retrospective

DISCLOSURES

- Authors have no conflicts of interest to disclose.

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