Assessment of Post-Operative Pain in Children with Cerebral Palsy

- Similar groups in terms of amount of pain
- Questions raised:
  - Did the CP group really have “zero” pain?
  - Did the CP group have that much better pain control than the Controls?
  - Why were there gaps in pain assessment in the CP group?

Are We Under-Medicating Patients with Neuromuscular Scoliosis after Posterior Spine Fusion?

- Institutional Review Board (IRB) approval
- Retrospective case control study
- 30 pts with NM scoliosis matched for age, gender, and weight with a group of patients with AIS
- Patients with AIS also matched - minimum of 10 vertebral levels instrumented / fused
- Additional data collected: length of stay, daily opioid use, and standard pain scores during the first 24 hours and the entire post-operative period

- Total opioid used (TOU) - measure used to determine relative pain management between the two groups
- TOU - determined by summing all of the opioids (narcotics) given during the hospital stay (oral / IV), then converted to morphine equivalent units (mg of morphine-equivalents, normalized by body weight).
- nTOU/LOS – normalized total opioid used / kg / per day length of stay (LOS)
- 2 pain assessment tools used (VAS, FLACC/non-verbal)
- Paired Student T-tests used to compare the two groups (p < 0.05)

NM group - 1.2 mg morphine/kg (range, 0.28 to 4.31)
AIS group - 3.52 mg morphine/kg (range, 0.71 to 15.51)
(p = 0.0006)
Are We Under-Medicating Patients with Neuromuscular Scoliosis after Posterior Spine Fusion?

- Discussion:
  - Patients with AIS undergoing PSF received more than 2x the amount of narcotic compared to an age and weight matched group of patients with NM scoliosis
  - This data suggests that these NM patients’ pain may be under-treated compared to our AIS patients

Hip Reconstructon is More Painful than Spine Fusion in Patients with Cerebral Palsy

- Concerns about postoperative pain control in patients with Cerebral Palsy (CP) are anxiety provoking for patients and families, especially Hip surgery!
  - A better understanding of the magnitude and quality of postoperative pain would better prepare patients and families.
  - Cohort of pts w/ CP undergoing Hip reconstruction compared to cohort undergoing PSF
  - Published in JCO 2015
  
Clinical Aspects of Acute Pain in Children with CP

- Do Epidurals help with postoperative pain control?
  - Pedersen reported as part of a tiered RCT, comparing local infiltrate vs placebo, with a 3rd arm for epidural for unilateral hip reconstruction
  - r-FLACC/VAS and rTOU was lower in the epidural group at 4 hr postop
  - At 9 and 21 hr po, TOU was less w/ epidural but NS p-value for difference in pain scores
  - Only 6 in each group

Hip Reconstruction is More Painful than Spine Fusion in Patients with Cerebral Palsy

- Our data suggests that for patients with CP, hip reconstruction is MORE painful than PSF, when comparing pain scores and total narcotics used
- This data supports our clinical assumption
- This is the first study, to our knowledge, that has documented this finding
- This knowledge will better prepare families about what to expect in the postoperative period.

Pedersen LK et al, Acta Orthopaedica, 2016
Chalkiadis et al reported on RCT with epidural w/ fentanyl or clonidine for SEMLS
- 24, 26 in each group
- No change in primary outcomes: pain scores, valium use, or muscle spasm (with low pain scores in each group)
- More vomiting and O2 desaturation with Fentanyl group; Clonidine resulted in lower SBP and HR

What about epidurals after SDR?
- Moore et al reported on a group of 31 pts undergoing SDR with an epidural compared to 41 with IV analgesia
- Epidural resulted in lower pain scores in first 24h, and less O2 desaturations

Can Epidural Baclofen help with postoperative pain control?
- 44 pts with CP undergoing SEMLS, 19 received baclofen in their epidural
- No changes in pain scores, opioid or benzo use, or LOS

Conclusion:
- Pain assessment in children with CP is difficult
- Need better tools/instruments
- Need concerted training programs for our RNs
- CP pts undergoing PSF receive less narcotics than those with AIS – likely we’re undertreating their pain
- Hip reconstruction is more painful than PSF in children with CP
- Helps counsel parents not to postpone PSF!
- Adjunctive Pain Modalities (Epidural) may be key to help better control postop pain

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Thank You