Dexmedetomidine Use in a Level IV NICU

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BACKGROUND

- Dexmedetomidine is an alpha agonist with primarily anxiolytic effects
- Dexmedetomidine benefits:
  - Little impact on respiratory drive
  - In vitro neuroprotective effects
- Limited data on
  - Prolonged use
  - Use in the NICU population

OBJECTIVE

- Evaluate dexmedetomidine use patterns, incidence of withdrawal and adverse events within our NICU

METHODS

- Review of all infants receiving dexmedetomidine April 2018 – November 2019
  - Indication for use
  - Dose
  - Duration
  - Need for transition to clonidine
  - Change in heart rate and blood pressure
  - Dose reductions or discontinuation within 24 hours of initiation

RESULTS

Administration Details (n=150 episodes, 108 patients)	
Patient Characteristics at Initiation	
Median Age (range)	27 days (1-280)
Median PMA (range)	39 weeks (25-66)
Invasively ventilated	100% (150)
Receiving neuromuscular blockade	21% (31)
Receiving Inotropes	23% (35)
Receiving Narcotics	92% (138)
Receiving Benzodiazepines	26% (39)
Dosage/Duration	
Median Starting Dose (range)	0.4 mcg/kg/hr (0.2-1.5)
Maximum Dose	1.5 mcg/kg/hr
Median Duration of Therapy (range)	11 days (1-86)
Dose Decrease within 24 hours	19% (36)
Discontinuation within 24 hours	3% (4)
Converted to Clonidine	51% (72)
Extubated on infusion	29% (44)
Indication	
Surgery	48% (72)
Clinical Decompensation	47% (71)
NPO	5% (7)

Table 1: Description of the patients, dosages and indications surrounding dexmedetomidine use.

Hemodynamic Impact of Dexmedetomidine therapy

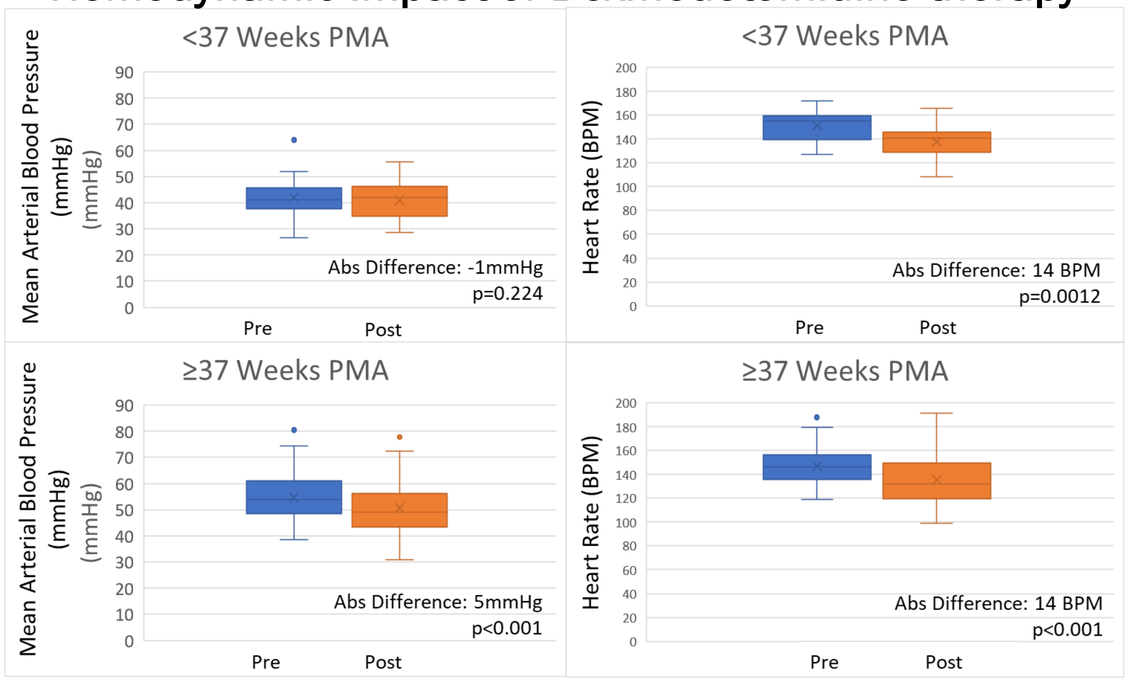

Figure 1: Dexmedetomidine resulted a decrease in average heart rate. Initiation of therapy was associated with a modest decrease in mean arterial blood pressure among term infants. The hemodynamic impact of dexmedetomidine was not more pronounced in premature infants. Comparisons via paired Wilcoxon signed rank sum test. Results exclude infants on inotropic agents prior to initiation of therapy

CONCLUSIONS

- Dexmedetomidine is a common adjective therapy in our NICU particularly post-operatively and with clinical decompensation
  - Polypharmacy was common
- Doses utilized were higher and duration of therapy longer that previously reported without severe adverse events
- Hemodynamic effects are primarily related to decreased heart rate and not exacerbated by prematurity
  - While dose adjustment was not uncommon within the first 24 hours, premature discontinuation of therapy was rare

Alicia Sprecher has documented no financial relationships to disclose or conflicts of interest to resolve.