Neurally Adjusted Ventilation Assist (NAVA)

Review of premature babies (PBs) <27 weeks gestational age (GA) from 2017 to 2020 ventilated with NAVA

Kayla Venn[1], Margaret Broom[2], Helen Brumby[3], Tejasvi Chaudhari[2], and David A. Todd[2]

[1]Department Paediatrics, [2]Department Neonatology, Centenary Hospital for Women and Children (CHWC), [3]The University of Canberra, ACT, Australia

Background

NAVA in conjunction with Continuous Positive Airway Pressure (CPAP) has become one of the primary respiratory supports in extubated PBs.

Aim

Review of NAVA use at CHWC in surviving PBs <27 weeks GA from 2017-2020.

Methods

Retrospective study using prospectively collected data of all surviving PBs <27 weeks GA born between 01/07/2017 and 31/06/2020. Data were collected from the NSW and ACT Neonatal Intensive Care Units (NICUs) Data Registry. Comparisons were between those PBs who were treated with NAVA/CPAP or conventional CPAP in respect to BWt, GA, Intraventricular Haemorrhage (IVH), Chronic Lung Disease (CLD) and Retinopathy of Prematurity (ROP). Univariate statistical analysis using GraphPad.

Results

46/55(83.6%) PBs survived and were included in the analysis. 27 PBs received NAVA/CPAP compared to 19 PBs who had CPAP. Both GA and BWt were significantly lower in the NAVA/CPAP group; (24.8±0.7 Vs 25.5±0.8 weeks respectively; p<0.01 and BWt 772.8±128.5g Vs 873.0±130.0g respectively; p<0.02: Table 1). More PBs in the NAVA/CPAP group had IVH (20/27 [74.1%] Vs 6/19[31.6%] respectively; p=0.01: Table 1/Figure 1), and developed CLD (24/27 [88.9%] Vs 9/19 [42.1%] respectively; p=0.001: Table 1/Figure 1). There was no significant difference in number of PBs developing ROP between NAVA/CPAP and CPAP (25/27 [92.6%] vs 16/19 [84.2%] respectively; ns; Table 1/Figure1). However, there were more PBs in the NAVA/CPAP group developing Stage 3 ROP (15/27 [55.6%] Vs 3/19 [15.8%] respectively p=0.013 (Figure 2).

Table 1: Baseline characteristics of NAVA/CPAP vs CPAP

	NAVA/CPAP n=27	CPAP n=19	Sig
GA (weeks±1SD)	24.8±0.7	25.5±0.8	p<0.01
BWt (grams±1SD)	772.8±128.5	873.0±130.0	p<0.02
Gender (M:F)	17:10	9:10	ns
IVH	20/27 [74.1%]	6/19[31.6%]	p=0.01
CLD	24/27 [88.9%]	9/19 [42.1%]	p=0.001
ROP	25/27 [92.6%]	16/19 [84.2%]	ns

Figure 1: Outcomes between NAVA/CPAP and CPAP

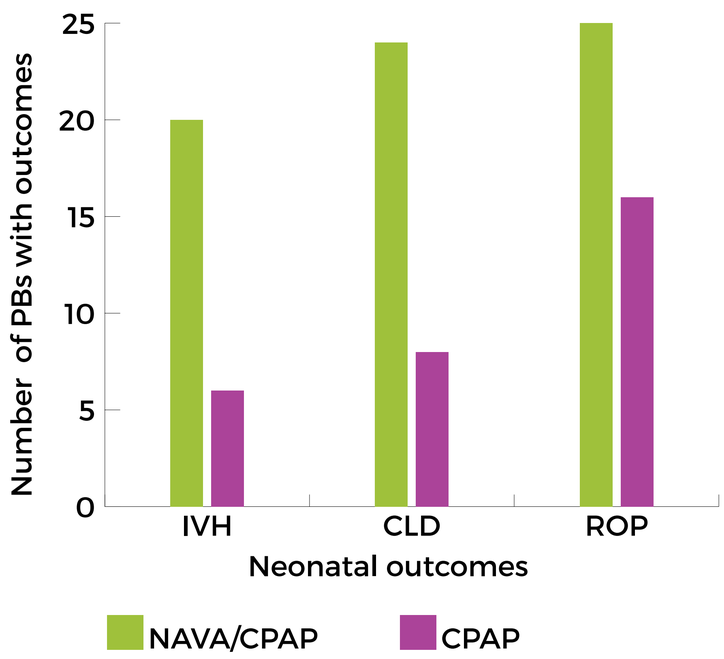
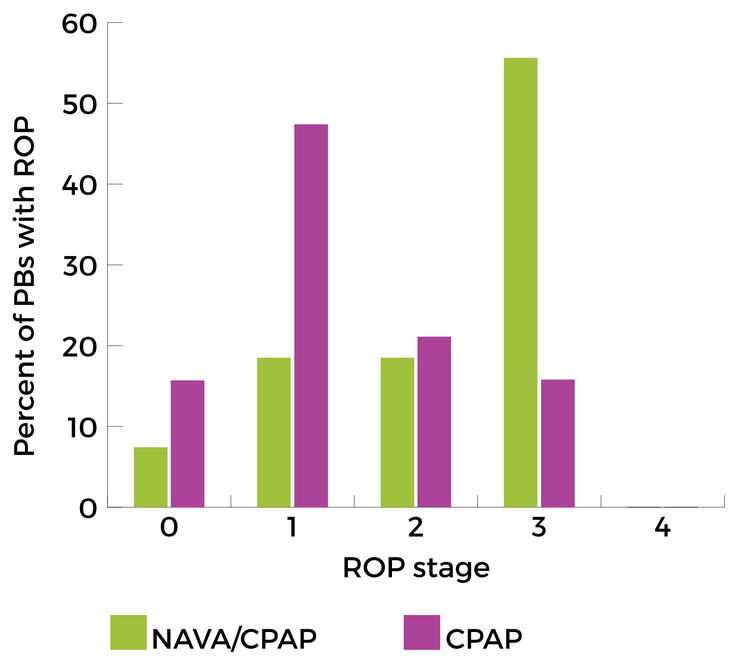


Figure 2: Stage of ROP NAVA/CPAP vs CPAP



Conclusions

PBs requiring NAVA/CPAP were more immature and had higher rates of IVH initially. However due to the complexities and the medical requirements of these PBs, more developed CLD and severe ROP. Further research is required on the use of NAVA/CPAP and the long-term implications on neonatal health.

Significance

This paper provides evidence regarding a new mod of ventilation and the outcomes of PBs.

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