Caffeine therapy's role in treating neonatal apnea of prematurity

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INTRODUCTION+ABSTRACT

Preterm birth is among the leading causes of infant mortality and long-term illness. Treating apnea of prematurity, the cessation of ordinary breathing for around fifteen to twenty seconds due to premature respiratory function, is one of the major challenges in neonatal care. Caffeine, a common over-the-counter stimulant, has been shown to be a non-invasive method to prevent and treat apnea of prematurity. Despite its widespread use, the role of caffeine therapy for preterm infants is still debated.

OBJECTIVES

This literature review examined if caffeine therapy is a successful non-invasive strategy to treat apnea of prematurity in preterm infants. Our case studies establish proper usage guidelines while also analyzing the immediate benefits in terms of survival rate and the long-term effects in terms of neurobehavioral outcomes.

METHODS

- **This literature review was completed using various literature from Google Scholar and the Cleveland State Michael Schwartz library.**
- **Key search terms included "caffeine therapy, preterm infants, and apnea of prematurity."**

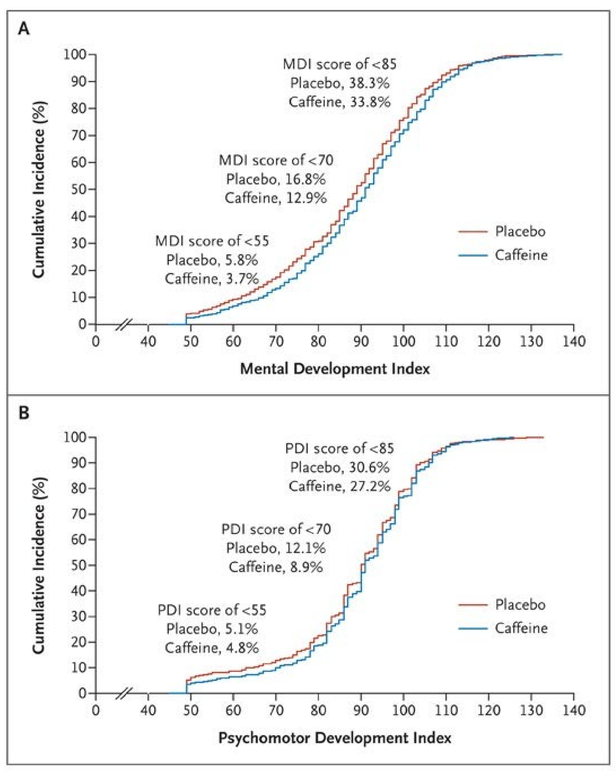

Figure 1. Caffeine and placebo groups' Bayley Test results.

RESULTS

- **Dosage protocols generally included a 20 mg/kg loading dose and 5 mg/kg daily.**
- **The results from the caffeine therapy studies illustrate a significant reduction in risks of death and poor neurodevelopmental outcomes in preterm infants.**
- **The earlier discontinuation of positive airway pressure was a crucial factor in these improved outcomes.**
- **One of the studies showed that 40.2% of infants between the ages of 18 and 21 months in the caffeine group experienced either death or neurodevelopmental disability, compared to 46.2% in the placebo group.**
- **Caffeine therapy also correlated with a decreased incidence of cerebral palsy, dropping from 7.3% in the placebo group to 4.4% in the caffeine group.**
- **Outcomes of cognitive delay were lower in the caffeine group (33.8%) compared to the placebo group (38.3%).**
- **Caffeine therapy's long-term safety was demonstrated in an examination of children at 11 years of age.**
- **The caffeine group performed better than the placebo group in fine motor coordination, visuomotor integration, visual perception, and visuospatial organization.**
- **General intelligence, attention, and behavior were not adversely affected by caffeine.**

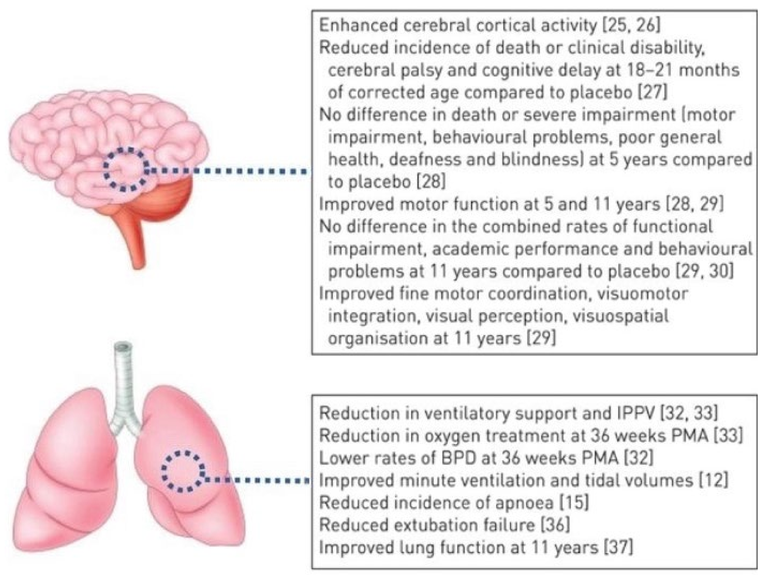

Figure 2. Caffeine citrate's known effects on early infant development. This image is a modified version of the original.

CONCLUSIONS

In conclusion, the literature reviewed shows evidence that caffeine therapy is an effective non-invasive strategy to treat apnea of prematurity in preterm infants. Caffeine therapy has been associated with increased cognitive outcomes and a reduction in apnea of prematurity. This poster concludes that there is a positive correlation with caffeine therapy and neonatal apnea of prematurity.

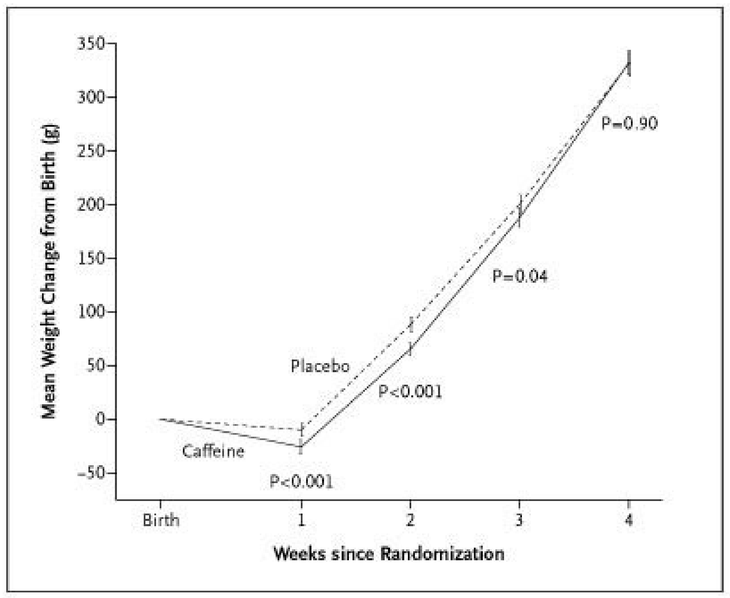

Figure 3. Body weight of infants in the two groups over time.

FUTURE WORK

While one study showed that caffeine therapy significantly reduced the rates of death and neurodevelopmental disability, other studies found that the rates of death and severe complications between the caffeine and placebo groups had no significant difference. We would like to see additional studies that clearly distinguish survival rate and neurodevelopmental outcomes.

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