

Impact of Dexmedetomidine Initiation on Hemodynamic and Oxygenation Status in Critically Ill Preterm Neonates

Purpose

Dexmedetomidine is an α_2 -adrenergic receptor agonist. One benefit of its use over opioids is the lack of respiratory depression. A slight oxygen desaturation following initiation of the infusion was observed in a small cohort of preterm neonates. The use of dexmedetomidine in neonates is not well studied. The purpose of this study is to further assess the cardiovascular impact, as well as the oxygenation stability of preterm neonates following dexmedetomidine infusion initiation.

Methods

A retrospective review of preterm neonates who received dexmedetomidine while admitted to a Level IV NICU was performed to analyze the patients' vital signs over a 72-hour time period. The starting and peak dose of the dexmedetomidine infusion over the observed time was recorded. Some medications that were administered during the 72-hour time period were documented if the medications could have an effect on the vital signs. Intermittent non-invasive blood pressure, heart rate, and pulse oximetry were recorded during this time period.

Results

One-hundred twenty-six patients received dexmedetomidine between March 2018 and January 2022. Fifty-seven neonates were analyzed. All neonates that were included were on mechanical ventilation. The mean heart rate slowed as the dexmedetomidine infusion was initiated and became stable around 30-hours after initiation. The mean blood pressure remained near baseline throughout the first 48 hours of the infusion. The mean oxygen saturation of the patients decreased below goal within the first eight hours but started to increase and remained greater than 90% the remainder of the analysis period.

Conclusion

Dexmedetomidine is becoming popular treatment in neonates. The hemodynamic status remained relatively stable, as the oxygenation status was unstable for the initial eight hours following dexmedetomidine infusion initiation. Oxygen saturation should be monitored closely during this time. Limited data regarding the use of dexmedetomidine in neonates shows the continued need for more research.