Background Lidoceaine is used as an add-on anti-epileptic drug (AED) in neonates when seizures persist despite treatment with first line anticonvulsants. Although lidoceaine has shown to be an effective anticonvulsant, cardiac toxicity associated with plasma concentrations >9 mg/L has limited its wide scale use. Previous studies from our group have proposed a dosing regimen for effective and safe lidoceaine use in term and preterm neonates with plasma concentrations not exceeding 9 mg/L.

Aim The present study evaluated lidoceaine use as anticonvulsant in neonates and prospectively validates the new dosing regimen.

Methods Data were collected at the neonatal intensive care unit of the University Medical Center Utrecht. Neonates refractory to at least one AED received lidoceaine according to clinical protocol. Lidoceaine was administered as a 2 mg/kg loading dose in 10 minutes followed by a three stage maintenance phase with tapering lidoceaine doses. Lidoceaine plasma concentrations were measured from blood samples taken at the end of the first stage (highest lidoceaine dose) and during the second or third stage (tapered lidoceaine dose). Efficacy was determined as abolition of seizures during lidoceaine therapy and no recurrence within 24 h after cessation.

Results Lidoceaine data were available from 75 neonates (gestational age 36.2 weeks [range 25.0–42.4], < 36.0 38.7%), birth weight 2771 g [range 675–4875], male 64.0%, mortality 45.3%), 23 patients (30.7%) received the new dosing regimen, 52 patients (60.7%) the old regimen. Highest measured plasma concentration with the new regimen was 9.15 mg/L and 16.8 mg/L with the old regimen. Efficacy with the new regimen was 56.3% and 53.8% for the old regimen. No cardiac toxicity was observed in either group.

Conclusions The new lidoceaine dosing regimen leads to safe and effective lidoceaine plasma concentrations and has similar efficacy compared to the previous dosing regimen.

REFERENCES

Disclosure(s) Nothing to disclose