Background Lidocaine is used as an add-on anti-epileptic drug (AED) in neonates when seizures persist despite treatment with first line anticonvulsants. Although lidocaine 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 new dosing regimen for effective and safe lidocaine use in term and preterm neonates with plasma concentrations not exceeding 9 mg/L.

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

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

Results Lidocaine 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 56.5% and 53.8% for the old regimen. No cardiac toxicity was observed in either group.

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

REFERENCES

Disclosure(s) Nothing to disclose