Use of Lidocaine for Seizures in Neonates
A case study

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Objective

This report explores the effectiveness and safety of lidocaine for treatment of seizures in neonates. Lidocaine is usually reserved as a second- or third-line agent due to its toxicity profile such as cardiac toxicity.

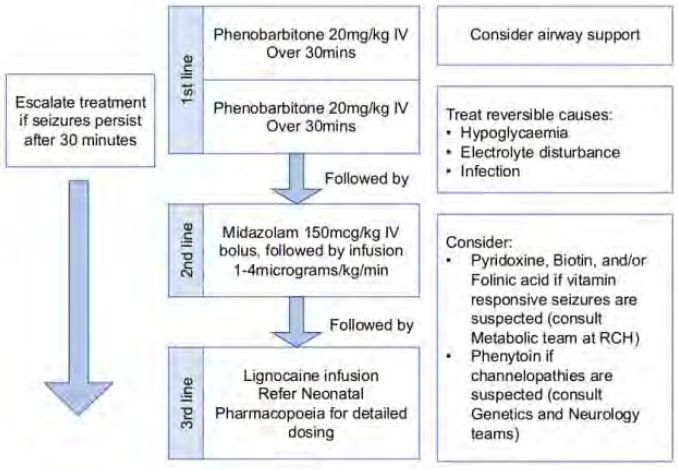
Clinical Features

- A 39-week-old neonate, delivered via emergency caesarean section due to foetal distress was noted to have rhythmic jerking movements of the right arm at 18 hours of life for a total of 8 episodes, lasting around 90 seconds.
- The patient was given a 20mg/kg loading dose of phenobarbital but continued to have 4 further seizures. Midazolam 1 microg/kg/min continuous infusion was then initiated but patient continued to have further seizures.
- The patient was intubated, and a lidocaine continuous infusion was commenced on day 3 at 7 mg/kg/hr for 4 hours, weaned to 3.5 mg/kg/hr and ceased after 12 hours following resolution of seizures.

Diagnostic	Result
Initial lactate	4.8 mmol/L
Amplitude integrated electroencephalography (aEEG)	Right electrographic changes
C- Reactive Protein	< 1 mg/L
Cranial Ultrasound	Left middle cerebral artery stroke
Cardiac Toxicity	Nil

Literature review

Three retrospective studies evaluating the effectiveness and safety of lidocaine in neonates were compared and all studies found that lidocaine was effective. Only a small percentage of neonates reported any adverse effects. [1,2,3]



The Women's seizure management Guideline

Pharmacist Interventions, Case Progress and Outcomes

- The patient had no further seizures once the lidocaine was ceased and there was no cardiac toxicity reported.
- The neonatal intensive care unit (NICU) pharmacist checked the appropriateness, doses and compatibility of all the medicines, and are responsible for updating and producing new medication protocols along with being an active part of the multi-disciplinary team.
- The NICU pharmacist also dispensed, supplied and monitored the patient for any adverse effects to the medicines administered.

Discussion

Lidocaine could be a viable anticonvulsant option in neonates. However, more robust studies should be conducted to further evaluate its safety and efficacy for the management of neonatal seizures.

References:

1. Salahudeen MS et al, J Am Geriatr Soc 2015;63(1):85-90
2. Biju B & Aaron KL, IET Syst Biol 2008;3(1):10-21
3. Morris LC et al, CPT Pharmacometrics Syst Pharmacol 2017;2(8):e41

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