South Australian Paediatric Clinical Guidelines

Intravenous phenytoin

Introduction

- Phenytoin, Dilantin®
- Available in ampoules containing 250 mg phenytoin sodium per 5 mL
- Do not dilute solution
- Do not administer with any other drugs
- Note: phenytoin should only be administered following consultation with a physician

Indications

- Emergency treatment for convulsive-status epilepticus
- Prevention of recurrent non-eclamptic seizures in known epileptic
- Women in labour who have missed their anticonvulsant dose for more than 12 hours or are vomiting and unable to take their usual oral anticonvulsant medication (For more information refer to PPG: Epilepsy and pregnancy management). Consult with physician or neurologist
- Magnesium sulphate is the drug of choice for treating eclampsia and pre-eclampsia (For more information refer to PPG: Magnesium sulphate infusion regimen)

Precautions

- The most common adverse reactions to phenytoin include:
  - Cardiovascular symptoms, e.g. hypotension and bradycardia
  - CNS depression, e.g. nystagmus, ataxia, slurred speech, decreased coordination and mental confusion
  - Gastrointestinal, e.g. nausea and vomiting
  - Local e.g. pain on infusion and severe phlebitis. Therefore administer via a large vein. The line is always flushed with 10 mL of sodium chloride 0.9 % immediately after the dose, to prevent phlebitis
  - These adverse reactions may result from excessive dose and / or excessive speed of administration

Single dose administration

- **Patients not currently taking phenytoin can be given a single high bolus dose (“loading” dose)**
  - The single high bolus dose for patients not already on phenytoin is 15 – 20 mg / kg (Australian Medicines Handbook 2004)
- In patients already taking phenytoin, their oral dose can be given intravenously according to the following administration regimen **(usually around 5 – 10 mg / kg)**

Preparation and administration of intravenous phenytoin

- Draw up specified quantity of phenytoin in a 50 mL syringe
- Administer single bolus dose via infusion pump
- Phenytoin should be administered via a dedicated line
- Do not give any other drugs via this line
- Commence single bolus dose of phenytoin at rate ordered by medical officer. Most commonly commence at 25 mg / min. **Maximal administration rate of 50 mg / min**
  - For example: A 70 kg woman (70 x 20 mg / kg) would have a prescribed single bolus dose of up to 1.4 g
  - To give this dose at a rate of 25 mg / minute = 1.5 g per hour, set the infusion pump at 30 mL / hour (1.4 g would take approximately 56 minutes to infuse)

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- If in status epilepticus administer at maximal rate of 50 mg /min
- After required dose of IV phenytoin given, flush intravenous (IV) line with 10 mL of sodium chloride 0.9 %, to prevent phlebitis

Observations / monitoring

- Monitor respiratory rate
- Monitor ECG and pulse oximeter continuously during infusion (note potential problem of sedation)
- Monitor blood pressure every 15 minutes during infusion
- If hypotension (< 110 / 70) or bradycardia (< 60 beats / min) develop:
    - Cease infusion and notify medical officer
    - The infusion can usually be recommenced after 15 minutes at a slower rate. Flush the line with 0.9 % sodium chloride during this time
- If the woman complains of dizziness, visual disturbance or nausea:
    - Cease infusion and notify medical officer
    - Usually the infusion can be recommenced after 15 minutes at a lower rate
- Reduce the rate of administration if seizures stop before full dose is given, or if arrhythmia or venous irritation occurs
- Blood levels should be taken:
    - Six hours after the loading dose
    - Daily to check trough levels. Preferably before morning dose
    - Therapeutic range, 10 – 20 mg / L (40 – 80 micromol / L)
- Serum albumin concentration is taken into account when calculating free phenytoin levels

Maintenance dose

- Anticonvulsant treatment may need to be continued in consultation with the physician

References

1. Australian Medicines Handbook. Thebarton: Finsbury press 2004. Available at URL: www.amh.net.au
2. MIMS Online. MIMS Pharmaceutical Product Information. [online database] Full product information Phenytoin Injection data version June 2011 [cited 2011 June 15]. Available: MIMS Online. (Level I).

Abbreviations

CNS	Central nervous system
e.g.	For example
g	Gram(s)
IV	Intravenous

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kg	Kilogram(s)
L	Litre(s)
mg	Milligram(s)
mL	Millilitre(s)
min	minute
%	Percentage

Version control and change history

PDS reference: OCE use only

Version	Date from	Date to	Amendment
1.0	09 July 2004	06 July 2009	Original version
2.0	06 July 2009	26 July 2011	Review
3.0	26 July 2011	23 Aug 2011	Review
4.0	23 Aug 2011	Current	

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