

A Case Report On Over Consumption of Phenytoin Tablets

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ABSTRACT:

Phenytoin is an Anticonvulsant drug used to treat various types of seizure. The sudden occurrence of abnormal electrical imbalance in brain causes Seizures. The repeated seizures activity is called Epileptic seizures which is a neurological disorder. Hence phenytoin can be Antiepileptic or Anticonvulsant drug. Phenytoin is considered as Non-specific sodium channel blocker and it targets all voltage gated channel subtypes and acts as an inhibitor. It also used to treat abnormal heart rhythms. This drug is available in various dosage forms like Tablet, capsule, oral suspensions and injectable solutions. Phenytoin at higher doses leads to severe damage and has some side effects.

KEYWORDS:

Anticonvulsants, Antiepileptic, Depolarization, Malformations, Exfoliate dermatitis, malformations,

MECHANISM OF ACTION:

Phenytoin acts a neuronal voltage gated sodium channel blocker. These gated channel blocker has three stages 1. Open stage 2. Closed stage 3. Inactive stage. Voltage gated sodium channels are embedded in between the membrane which has two gates, the activation gate towards extracellular membrane and inactivation gate towards intracellular membrane. Initially voltage gated sodium channel are in closed state/ resting stage. At this state, the membrane potential is -70Mv. When impulse passes through the neurons, action potential generates and the potential at this stage is called threshold potential i.e. -55Mv. This leads to activation gate open i.e. open stage. Sodium ions enters the membrane that causes Depolarization (+30Mv). After entering enough sodium ions into membrane, sodium channel gets inactivated and closes inactivation gate which is Inactive stage. Then the potential decreases and gets back to -70Mv.

In patients who are suffering from seizures, there is a sustained high frequency repeated firing of action potential. Phenytoin prolongs inactivated state of voltage gated sodium channel governs the refractory period of neuron as a result high frequency discharges are inhibited and repeated firing of neurons stops which relieves the symptoms of seizures.

Phenytoin also acts on cardiac tissue by shortening cardiac action potential and prolongs refractory period between them.

CONTRAINDICATIONS:

Pregnancy women should not consume phenytoin tablet because it leads to birth defects of baby and increases malformations or reversible damage of human fetal. Phenytoin is associated with induction of reversible IgA deficiency. Chronic phenytoin consumption leads to decreased bone density and increased bone fractures. It also induces metabolizing enzymes in liver. Rash, itching, excessive hairiness, exfoliate dermatitis, headache, nausea, vomiting, constipation, dizziness etc. can be seen in patients consuming phenytoin tablets.



PHENYTOIN

5,5-diphenylimidazolidine-2,4-dione
Molecular formula = C₁₅H₁₂N₂O₂

ELIMINATION:

Phenytoin has narrow therapeutic index between 10-20mg/L and it the optimum concentration of anticonvulsant effect. The apparent volume of distribution is 1L/kg. Serum concentration of phenytoin are monitored by measuring total phenytoin concentration. The main route of elimination is through hepatic metabolism.

DOSE AND DOSAGE FORMS:

Phenytoin is available in the form of tablet, chewable (extend and intermediate release), suspension and injectable solutions. Doses are prescribed according to their age. Neonates are administered intravenously (IV)/ orally initially 5-8 mg/kg/day for every 8-12 hours. Children under 6 years are administered intravenous slowly 20mg/kg. For an adult tablet dosage form is given 100mg orally thrice in a day and should maintained at 300-400 mg/day. For an adult suspension dose 125mg is administered orally 3 times initially. High doses of phenytoin can cause cardiac arrest and leads to other complications.

CASE PRESENTATION:

A 44-year-old male patient admitted in KGH hospital with complaint of over consumption of unknown quantity of phenytoin tablet. Patient is in altered sensorium. Patient is suffering from hypertension and epilepsy and ischemic stroke and taking his medication. The vital laboratory investigations are examined and quite normal. Patient is treated with IVF @75ml/hr and injection Pantop 40mg IV for two days. Patient is allowed to take medication properly and quantitatively and diet is prescribed. Patient recovered and allowed to take some rest.

II. CONCLUSION:

Phenytoin is a neuronal voltage gated sodium channel blocker and can be used for treating seizures. The causative factor for seizures can be anything that interrupts the normal connection between nerve cells in brain. The chronic neuronal disorder that causes repeated seizures activity called Epileptic seizures. Phenytoin overdose leads to bradycardia and irregular heartbeats. Pregnancy women gets complication if thus drug is administered in irregular doses. Due to its narrow therapeutic index, small difference in dose and blood concentration of phenytoin leads to serious therapeutic failure and or adverse drug reactions that are life-threatening or result in persistent or significant disability or incapacity.

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