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Abstract from Current Literatures

Convulsive Status Epilepticus: A Randomized Double-blind Controlled Clinical Trial

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Objective: To compare the efficacy of phenytoin, valproate, and levetiracetam in the management of pediatric convulsive status epilepticus.

Design: Randomized double-blind controlled clinical trial. Setting: Pediatric critical care division in a tertiary care institute from June, 2016 to December, 2018. Participants: 110 children aged three month to 12 year with convulsive status epilepticus. Intervention: Patients not responding to 0.1 mg/kg intravenous lorazepam were randomly assigned (1:1:1) to receive 20 mg/kg of phenytoin (n=35) or valproate (n=35) or levetiracetam (n=32) over 20 minutes. Patients with nonconvulsive status epilepticus, recent hemorrhage, platelet count less than 50,000 or International normalized ratio (INR) more than 2, head injury or neurosurgery in the past one-month, liver or kidney disease, suspected or known neurometabolic or mitochondrial disorders or structural malformations, and allergy to study drugs; and those who were already on any one of the study drugs for more than one month or had received one of the study drugs for current episode, were excluded. Outcome measure: The primary outcome was the proportion of patients that achieved control of convulsive status epilepticus at the end of 15 minutes after completion of the study drug infusion. Secondary outcomes were time to control of seizure, rate of adverse events, and the requirement of additional drugs to control seizure, length of ventilation, hospital stay, and functional status after three months (Glasgow Outcome Scale).

Results: The study was stopped after the planned mid-interim analysis for futility. Intention to treat analysis was done. There was no difference in primary outcome in phenytoin (31/35, 89%), valproate (29/35, 83%), and levetiracetam (30/32, 94%) (P=0.38) groups. There were no differences between the groups for secondary outcomes. One patient in the phenytoin group had a fluid-responsive shock, and one patient in the valproate group died due to encephalopathy and refractory shock.

Conclusions: Phenytoin, valproate, and levetiracetam were equally effective in controlling pediatric convulsive status epilepticus. Keywords: Anti-epileptic drugs, Management, Outcome Seizure.

Efficient Transmission of Mixed Plasmodium falciparum/vivax Infections From Humans to Mosquitoes

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Background: In Southeast Asia, people are often coinfected with different species of malaria (Plasmodium falciparum [Pf] and Plasmodium vivax [Pv]) as well as with multiple clones of the same species. Whether particular species or clones within mixed infections are more readily transmitted to mosquitoes remains unknown.

Methods: Laboratory-reared Anopheles dirus were fed on blood from 119 Pf-infected Cambodian adults, with 5950 dissected to evaluate for transmitted infection. Among 12 persons who infected mosquitoes, polymerase chain reaction and amplicon deep sequencing were used to track species and clone-specific transmission to mosquitoes.

Results: Seven of 12 persons that infected mosquitoes harbored mixed Pf/Pv infection. Among these 7 persons, all transmitted Pv with 2 transmitting both Pf and Pv, leading to Pf/Pv coinfection in 21% of infected mosquitoes. Up to 4 clones of each species were detected within persons. Shifts in clone frequency were detected during transmission. However, in general, all parasite clones in humans were transmitted to mosquitoes, with individual mosquitoes frequently carrying multiple transmitted clones.

Conclusions: Malaria diversity in human hosts was maintained in the parasite populations recovered from mosquitoes fed on their blood. However, in persons with mixed Pf/Pv malaria, Pv appears to be transmitted more readily, in association with more prevalent patent gametocytemia.

The Relation Between Maternal / Neonatal Vitamin D Levels and Early Onset Neonatal Sepsis

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In addition to its classical role in bone metabolism, vitamin D also has an immunomodulatory effect on immune function. Our aim was to determine the relation between serum 25-hydroxy vitamin D(25(OH)D) concentrations in newborns and their mothers with early onset neonatal sepsis (EOS). Also we aim to study the effect of severity of vitamin D deficiency on incidence of EOS. The design comprises a hospital- based case- control study. The study group consisted of 50 newborns with EOS who was admitted to neonatal intensive care unit and their mothers. Controls were 50 healthy newborns of the same age as the study group and their mothers. The study subjects were divided into insufficient, moderate and severe deficiency according to vitamin D level. There is no significant statistical difference between study and control groups in gestational week, birth weight, birth height, head circumference and age. The mean serum 25(OH)D concentrations in the study group newborns were significantly lower than those of the control group (11.58±4.883 ng/ml and 28.78±6.453 ng/ml respectively). The 25(0H)D concentrations of newborns were highly correlated with mothers' serum in both groups. Severe vitamin D deficiency was significantly more common in the sepsis group. Data shows that 25(OH)D concentrations of the newborns were highly correlated with the level of CRP, duration of hospital stay, and complications caused by sepsis. Our findings suggest that newborns with vitamin D deficiency may have an increased risk of suffering from EOS. Newborns with more vitamin D deficiency were found to have higher CRP levels, a longer hospital stay, and a higher incidence of complications. The strong positive correlation between newborns' and their mothers' 25(OH)D concentrations makes that adequate vitamin D supplementation of mothers during pregnancy is of great importance, through a proper ante-natal care, especially in winter months.