heart rate than stimulation without soothing (p = 0.015). A significantly higher NIPS score during heel lancing, without soothing (median score = 6) as opposed to during heel lancing with NNS, and while suckling sucrose (p = 0.000). EEG wave’s frequency of alpha waves at electrode position F3 was significantly higher, following induction of pain while suckling sucrose (p < 0.05). The Results yielded a significant correlation between random blood sugar levels and the frequency of both of alpha and beta EEG waves following induction of pain, without soothing (r = 0.529, 0.589 respectively and p = 0.014, 0.005 respectively). Moreover, Results also concluded that there is a significant positive relationship between heart rate and the frequency of beta waves at electrode position F4 following induction of pain, without soothing (r = -0.452 and p = 0.039). A significant correlation between oxygen saturation levels and the frequency of delta EEG waves at electrode position F4 was noted following induction of pain with NNS (r = -0.478 and p = 0.028). A significant correlation between heart rate and the frequency of theta EEG waves at electrode position F3 was detected (r = 0.448 and p = 0.042). Moreover, a significant correlation was noted between oxygen saturation levels and the pain scale score, as well as the frequency of both alpha and delta EEG waves (r = -0.492, 0.433, -0.453 respectively and p = 0.023, 0.049, 0.039 respectively). Results also pointed to a significant correlation between oxygen saturation levels and NIPS score, during sucrose sucking (r = -0.492 and p = 0.023).

Conclusion: Pain triggers nociceptive brain electrical activities as evidenced by EEG changes. It was also proven that oral sucrose administration significantly affects the electrical activities of the neonatal brain’s nociceptive neural circuits.

Plasma citrulline as a diagnostic biomarker for necrotizing enterocolitis in preterm neonates

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Background: Citrulline is an amino acid synthesized in small intestine’s enterocytes so it may be used as biomarker of its function. Necrotizing enterocolitis (NEC) represents an intestinal disorder with significant morbidity and mortality in preterm neonates.

Aim: Evaluate role of plasma citrulline level as a diagnostic marker of NEC in preterm neonates.

Methods: It was conducted on 40 preterm neonates with gestational age < 37 weeks, in cases and controls groups, each comprised 20 subjects, in addition to clinical, laboratory, and radiologic investigations of NEC, all preterm were subjected to investigating plasma citrulline level on day 1 of life and at time of clinical NEC diagnosis.

Results: Plasma citrulline levels of NEC cases were significantly lower than the levels of controls at time of NEC diagnosis, while there was no significant difference of plasma citrulline on day 1 between the two groups. Plasma citrulline significantly decreased according to severity and mortality (P < 0.001). Citrulline at a cut-off value 5.98 is 95% sensitive and 80% specific to diagnose NEC.

Conclusion: Plasma citrulline may be utilized as a biomarker for NEC diagnosis, yet more research is needed to determine its efficacy in using it as a prognostic value.

Vitamin A status in children and adolescent with chronic liver disease

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Background: Chronic liver diseases in children are relatively common disorders. Malabsorption of dietary fat and fat-soluble vitamins including vitamin A is one of the major complications of childhood cholestatic liver disorders, the reduced biliary secretion of bile acids during cholestasis causes vitamin A malabsorption and potential deficiency of vitamin A. Vitamin A deficiency (VAD) is associated with the progression of chronic liver disease (CLD).

Aim: To estimate the serum Retinol level in children and adolescent with chronic liver diseases (CLD) and correlate them with disease severity and ocular examination in these patients.

Patients and Methods: This is a cross-sectional, case-control study that included sixty patients of children and adolescents following up at the Pediatric Hepatology Clinic at Faculty of Medicine Ain Shams University compared to 30 age, sex and pubertal stage matched clinically normal controls. Personal, medical history, anthropometric measurements, clinical examination, eye examination by slit-lamp, supplemented with tests to assess eye dryness and tear production (Fluoresceine Break up Time, FBUT) and schirmer test were done. Liver profile, and Serum assay of Retinol were also done.

Results: Cases had significant deficiency in serum Retinol level (p < 0.0001), serum Retinol level could be used in discrimination of cases from controls at a level of ≤ 21.14ug/dl, with (93.3%) sensitivity and 100% Specificity. Cases had significant relation between serum Retinol level and hepatomegaly. There was negative correlation between level of serum Retinol level and liver enzymes, AST and ALT (r = 0.388, r = 0.393, P = 0.002, P = 0.049 respectively). There was no significant relation between deficiency in serum Retinol and severity of eye dryness using slit lamp, shirmer test and FBUT (p > 0.05). There was significant correlation between right and left slit lamp finding and prothrombine time (P = 0.010, 0.008 respectively). There was statistically significant relation between FBUT (Fluoresceine Break up Time) in both eyes with Prothrombin time and albumin level (P = 0.046, 0.027).

Conclusion: Patients with chronic liver diseases had significant deficiency in serum Retinol level, serum Retinol level may be a useful non-invasive biochemical marker that reflect the severity and prognosis of chronic liver diseases in children.

Hyperbaric oxygen for the treatment of autistic spectrum disorder

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Background: Autism is a neurodegenerative disease characterized by cerebral hypo perfusion, neuro inflammation, gastrointestinal inflammation and increased oxidative stress. Hyperbaric oxygen therapy (HBOT) helps overcome hypo