Conclusion: Estrogen receptor alpha polymorphism may become an additional risk factor affecting course and progression of Type1 diabetes mellitus in pubertal girls.

Evaluation of role of CXCR4 as a marker in neonatal sepsis
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Background: Neonatal sepsis is one of the major health problems which supported by a cytokine-mediated condition. CXCR4 is an alpha-chemokine receptor specific for a molecule endowed with potent chemotactic activity for lymphocytes. CXCR4 expression on the surface of circulating blood lymphocytes was up-regulated during sepsis.

Aim: to evaluate the diagnostic and prognostic value of CXCR4 in late onset sepsis in neonate.

Patient and Methods: we conducted a prospective, case control study on 60 neonates >34 weeks gestation, divided into 2 groups: 30 healthy neonate as control and 30 neonates admitted to neonatal intensive care unit with late onset sepsis as patient group. This group was further classified into two groups, proven sepsis (positive blood culture) and probable sepsis (negative blood culture). All neonates included were subjected to full clinical examination, CBC with differential, CRP with titre, blood culture and serum CXCR4 at the time of suspicion of infection. The patient group was subjected to repeat investigations within 48-72 hours after treatment as follow up.

Results: CXCR4 was increased in patients group and in proven sepsis group compared to probable sepsis group. There was highly significant positive correlation between CXCR4 with CRP and total leucocytic count, neutrophil and lymphocytes. ROC curve showed that the best cut off point for CXCR4 in diagnosis of late onset sepsis was found > 21.3(pg/ml) with sensitivity of 100%, specificity of 100% and area under curve of 100%

Conclusion: CXCR4 is a good biomarker of inflammatory response in neonates with late onset sepsis. CXCR4 concentration increased in both probable and proven sepsis and decreased in response to effective treatment.

A 3 years experience of operated surgical neonates outcome in a tertiary hospital of Ain Shams University (neonatal intensive care unit)
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Background: Surgery on a newborn has been one of the most challenging subjects in medical science. A neonate is born with its unique physiological features of very narrow normal ranges, beyond which it is helpless to cope with the adverse situations. Added to this, it has to be able to respond to life-threatening surgical conditions for its survival.

Objectives: We aimed in this piece of work to assess the outcome of different neonatal surgical conditions and factors responsible for mortality in surgical neonates.

Patients and Methods: The present retrospective study was conducted in the NICU of Ain Shams University Children’s Hospital using the records from the beginning of year 2011 till the end of year 2013. The recorded data included gestational age, postnatal age at admission, sex of neonates, maternal age, mode of delivery, surgical diagnosis, surgery outcome, risk factors for occurrence of sepsis, classification of type of sepsis if present (Early-onset sepsis, Late-onset, or nosocomial), blood culture Results, antimicrobials used, length of hospital stay, need for ventilation, risk factors for occurrence of sepsis, cause of death.

Results: The study included 69 patients with surgical problems who were admitted to the NICU. They were 45 males (65.22%) and 24 females (34.78%) with a male to female ratio of 1.8: 1. They were 10 preterms (14.49%) and 59 full-terms (85.51%); with mean gestational age range from 32-40 weeks, mean ± SD: 36.91 ± 1.98 weeks. 37 (53.62%) were delivered by LSCS and 32 (46.38%) by SVD. 33.33% of neonates were admitted between 1 and 2 days postnatal, 42.9% were more than 1 week old, with mean age of admission 9.49 ± 10.37 days. The most common surgical problems were Tracheo-oesophageal fistula (9 cases), followed by imperforate anus low anomaly 5 cases, imperforate anus high anomaly 5 cases, then Hirshsprung disease 4 cases. Also hydrocephalus and Arnold Chiari malformation each 4 cases. Diaphragmatic hernia 4 cases. 61 cases had sepsis, 50 cases were discharged, 19 died and 8 had no complications. The most common causes of death were; sepsis (16 cases), heart failure (9 cases), respiratory failure (5 cases), cardio -pulmonary failure (3 cases) and pneumonia and pulmonary hypertension each one case.

Conclusion: Most of cases were full term babies and had late presentation to our hospital which led to delayed operations. Most common surgical problem was trachea-oesophageal fistula.

Analysis of pain effect on EEG recordings and oral sucrose sucking effect on pain reduction in neonates
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Background: Evaluating pain in neonates is a considerably difficult task, given the fact that pain is merely a subjective phenomenon. This study aimed at assessing the effects of pain on the EEG picture of neonates, and whether or not, sucrose administration can alleviate pain associated with invasive neonatal procedures.

Methods: The EEG recordings of a cohort of 21 neonates, who didn’t exhibit any manifestations of neurological deficits, were prospectively analyzed. Postnatal age ranged between 3 and 27 days, with a mean of 14.05 ± 7.32 days. EEG recording, vital data and Neonatal Infant Pain Scale (NIPS) scoring were performed before and following painful stimulation via heel stick blood sampling during routine blood glucose measurements via glucometer, during non-nutritive sucking (NNS) and during sucking of sucrose.

Results: Analysis of obtained data revealed Significant rise in heart rate, lower oxygen saturation following nociceptive stimuli (without soothing (p = 0.0007 & p = 0.016 respectively). Sucking of sucrose was associated with a significantly lower
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 F3 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 suckling (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 (CLDs) 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 correlation 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 prothrombin 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...