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MATERNAL AND UMBILICAL PLATELET INDICES AT THE TIME OF DELIVERY

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A variable platelet count without obvious etiologic factors is often observed in newborns. In this study we evaluate the platelet count (plt) and the platelet indices in umbilical venous blood of full term, healthy newborns. We also investigate the relationship of platelet indices with several clinical parameters.

Methods: Platelet count (plt-m, plt-u) and platelet indices: Mean Platelet Volume (MPV-m, MPV-u), Platelet Distribution Width (PDW-m, PDW-u) and Plateletcrit (P1cr-m, P1cr-u) in 50 paired maternal and umbilical venous specimens were determined at delivery. The maternal age, blood pressure, serum glucose and the mode of delivery were recorded. The gestational age, birth weight, length, and the 1st minute Apgar score were documented as well.

Results: The mean (sd) and the p value of the platelet parameters (maternal vs. umbilical) were determined: plt-m: 234±69, (range 114–306) vs. plt-u: 271±57, (range 113–274), p=0.001; MPV-m: 8.7±0.11 vs. MPV-u: 7.2±0.5, p<0.001; PDW-m: 17.1±0.7 vs. PDW-u: 16.3±0.5, p<0.001; P1cr-m: 0.2±0.05 vs. P1cr-u: 0.19±0.04, p=0.3. A significant relationship was demonstrated between umbilical platelet count and maternal blood pressure (BP): Systolic BP: r=0.26, p=0.05, Diastolic BP: r=0.26, p=0.05. Associations between platelet indices and the other clinical and laboratory parameters were found to be insignificant.

Conclusions: The umbilical platelet count was significantly higher than the simultaneous maternal values. However, the MPV and PDW were significantly higher in maternal specimens. Importantly, a significant relationship was demonstrated between umbilical platelet count and maternal blood pressure.

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COMPARISON OF CAPILLARY REACTIVITY BY WHITE LIGHT SPECTROSCOPY WITH LABORATORY MARKERS IN NOSOCOMIAL NEONATAL SEPSIS

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BACKGROUND: Early recognition of sepsis is important. Treatment is stopped after a defined time or after laboratory markers have normalized. Repetitive blood sampling is necessary. A non-invasive tool for recognizing septic infants would be helpful. **AIM:** To determine whether capillary reactivity measured by the non-invasive spectroscopic device Mediscan 2000 (MBR Technics, GER) correlates with laboratory markers in nosocomial sepsis.

METHODS: Infants with positive blood cultures on antibiotics had bloods taken for monitoring. Spectroscopic measurement of capillary refill time (CRT) by Mediscan was performed within 2h of blood sampling. The device measures total haemoglobin in capillaries using a probe with a short pathlength. The probe was placed at the inner forearm and a baseline total haemoglobin value obtained. Then a defined pressure stimulation of 5s at 5N was applied and the reaction recorded. The time between the end of the pressure stimulation and the resulting peak of the capillary refill activity was calculated. White cell, granulocyte and platelet counts and CRP were compared with Mediscan results. Statistical analysis with EXCEL and SPSS. Positive vote from the ethics committee.

RESULTS: 11 patients (GA 28 weeks, range 25–42, birthweight 1kg, range 0.63–4.23) positive for coagulase-negative staphylococcus in the blood culture were investigated. CRT was 6s (range 2–26s). Leucocyte, granulocyte and platelet count were 20 (range 7.5–32.3), 13 (range 4.6–28.1) and 271 (range 38–554) x10⁹/l respectively. CRP was 19mg/l (range 5–72). There was a significant correlation between the length of the CRT and the number of white cells and granulocytes (r=0.7, p=0.009 and r=0.6, p=0.02). There was no statistical correlation between platelet count or CRP and CRT by Mediscan (p=0.26 and p=0.44).

CONCLUSIONS: Capillary reactivity measured by the Mediscan reflects the condition of the septic infant. It indicates disease severity. Future studies will assess its role in guiding antibiotic treatment and reducing blood samples.

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BLOOD SUGAR MONITORING IN PRETERM INFANTS < 31 WEEKS AND < 1000 G

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BACKGROUND: Glucose values <2.7 mmol/l >48h or on >5 occasions lead to neurological deficits. Bedside glucose measurement devices are inaccurate. **AIM:** To determine whether frequent random blood sugar (BS) measurements in infants <31 weeks and 1000g are helpful in detecting hypoglycaemia.

METHODS: Retrospective data analysis of 10 inborn infants <31 weeks and <1000g. Exclusions: gestational diabetes, maternal diabetogenic medication, SGA, LGA, hypothermia, inotropes and polycythaemia. Statistical analysis with EXCEL and SPSS.

RESULTS: GA was 29 weeks (range 26–30) and birthweight 915g (range 750–950). 80% presented a BS >2.0mmol/l at 1h (range 0.25–1.5) after birth. During the first 10 days of life BS were 6mmol/l (range 4–9) and 5mmol/l (range 4–7) until discharge. During the first 10 days of life BS were measured 23 times (range 11–51) and 42 times (range 11–110) until discharge. Carbohydrate intake and BS correlated significantly (r = 0.37, p = 0.031), whereas protein or lipid intake and BS did not. There was no significant correlation between frequency of BS monitoring and the number of recorded hypoglycaemias (r = 0.48, p = 0.082). The lowest BS measured per patient was 2.2mmol/l (range 1.2–4.2). This happened mainly on day 1 (range 1–34). 90% were asymptomatic. Only 20% had appropriate nutritional intake during hypoglycaemia. In 50% a glucose infusion (10%) at 60 ml/kg/d was started. 2 had a glucose bolus of 200 mg/kg i.v., 3 did not have treatment.

CONCLUSIONS: Hypoglycaemia in infants <31 weeks and <1000g is rare. They happen mainly at admission on day 1 and are mainly asymptomatic. BS should be >2.0 mmol/l 1h after birth. A continuous carbohydrate intake of 13g/kg/d is sufficient to maintain BS at 5–6 mmol/l. Frequent random BS measurements are not helpful in detecting asymptomatic hypoglycaemias in preterm infants <1000g.

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MOTHER-INFANT TRANSMISSION OF HEPATITIS B VIRUS (HBV) INFECTION IN CHILDREN RECEIVING FULL PASSIVE AND ACTIVE IMMUNOPROPHYLAXIS.

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Aim: To evaluate the prevalence of hepatitis B virus (HBV) infection among pregnant women, and the risk of mother-infant transmission of HBV infection, in children receiving full active and passive immunoprophylaxis at birth.

Methods: A total of 24000 women, followed at the same Institution, 2002–2003, underwent screening for the presence of HBV surface antigen (HBsAg) during the last trimester of pregnancy. Newborns to HBV carrier women entered a follow-up programme, which included evaluation of surface antigen and markers of HBV at three and twelve months of age.

Results: Newborns to mothers coming from developing countries were 4700 (20%). Women found positive for HBsAg were respectively 48 out of 19300 Italian pregnant women (0.24%; range: 0.1–0.4%) and 68 of 4700 immigrant women (1.44%; range: 1.1–1.8%). None of the children born to Italian mothers was found to be positive for HBsAg, while 2 (2.9%) infants born to immigrant women were positive for HBsAg at 3 months of life and developed acute hepatitis B. Sera of both children were tested for DNA, by polymerase chain reaction, with nested primers adjacent to the antigenic determinant a of the HBV S gene. The two children were found positive for HBV DNA and, after sequencing of amplified fragment, infected respectively by genotype D (wild type) the infant born to Egyptian mother and by genotype B (wild type) the child born to Chinese mother. Mother-child pairs resulted infected by the same genotype.

Conclusion: A close follow-up of children born to HBV carrier women is required, even if full active and passive immunoprophylaxis is performed, in order to monitor rate of vertical transmission of HBV infection and genotype involved.

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POLYVINYL OROGASTRIC FEEDING TUBE AND IATROGENIC PHARYNGO-ESOPHAGEAL PERFORATION IN VERY-LOW BIRTH WEIGHT INFANTS

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Background/Aims: Placement of feeding tube may be associated with various complications, including iatrogenic pharyngo-esophageal perforation (PEP). To determine the incidence of PEP secondary to the use of polyvinyl orogastric feeding tube in newborns weighing less than 1500 g (very low birth weight infants, VLBW), we conducted a retrospective study over a three and half year period.

Methods: From January 2000 to June 2004 a total of 411 VLBW infants were born in our maternity hospital; 371 newborns were admitted to our III level 8-bed neonatal intensive care unit. All the hospital files were retrospectively reviewed.

Results: In all the newborns a 5 or 8 F orogastric polyvinyl feeding tube was inserted in order to provide minimal or exclusive enteral feeding or to evaluate gastric residuals. Three iatrogenic PEP were observed, giving an incidence of 1:124 VLBW infants. One infant died of sepsis and clinical course was compatible with mediastinitis. The other two infants were treated successfully with conservative nonsurgical management. The incidence reaches values of 1:25 newborns weighing less than 750 grams.

Conclusions: PEP in our experience involved exclusively preterm infants weighing less than 750 g after traumatic placement of polyvinyl feeding tube. It is likely that the risk of PEP in this group of newborns may be even higher if we think that the majority of non-survivor VLBW newborns died in the first day of life, when the attempts to place an orogastric tube were not very much or even absent. Moreover, this estimate took into account only the PEP radiologically diagnosed. It is very likely that the incidence of esophageal injury without perforation or dislocation of enteral feeding tube may be even higher. In order to avoid iatrogenic PEP we suggest the use of silastic feeding tube with a really soft end instead of polyvinyl catheters.

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DOPAMINE INFUSION AND PITUITARY SUPPRESSION IN VERY LOW BIRTH WEIGHT INFANTS

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Background/Aims: Previous studies demonstrated that dopamine infusion reduces plasma concentration of thyroxine (T4), thyroid stimulating hormone (TSH), prolactin (PRL), and growth hormone (GH) in adults, children and infants. The purpose of this prospective study was to evaluate the relationship between dopamine infusion and the dynamics of pituitary hormones in preterm newborns weighing less than 1500 g (very low birth weight infants, VLBW) admitted in a neonatal intensive care unit of a university hospital over one year period.

Methods: A total of 97 preterm newborns were enrolled and divided into two groups: group B included hypotensive infants treated with plasma expanders and dopamine infusion; group A was the control group including newborns never treated with dopamine. The newborns were studied through blood samples taken every morning for ten days. Newborns of group B were studied during dopamine infusion and after its withdrawal.

Results: Among the VLBW newborns given dopamine, a reduction of T4, TSH and PRL levels was noticed since the first day of treatment (reduction of TSH levels 41.8% in group A vs 68% in group B; T4 decrease of 10.3% in group A vs 41.9% in group B; PRL decrease of 4.3% in group A vs. 59.7% in group B), and a rebound of their levels was evident since the first day after its interruption. Instead, the postprandial GH levels were roughly constant. GH concentrations were a little lower in newborns treated with dopamine, and a slight increase was observed after its withdrawal. However, observed differences were not statistically significant.

Conclusions: The results suggest that dopamine infusion reduces T4, TSH and PRL plasma levels in preterm VLBW infants and have no effect on postprandial GH rate. This hormonal suppression reverses rapidly after dopamine withdrawal. This observation suggests that the iatrogenic pituitary suppression probably cannot produce long term injuries.