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EFFECT OF UNCONJUGATED BILIRUBIN ON INTESTINAL PERMEABILITY AND FECAL CALPROTECTIN IN HEALTHY TERM NEWBORNS.

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Unconjugated bilirubin(UCB) may be responsible of a damage on intestinal mucosa of the jaundiced newborns.

We investigate the effects of UCB on intestinal permeability (IP) and on fecal calprotectin (FC) of healthy, term neonates. IP was measured by the sugar absorption test (SAT) and FC was measured by an ELISA kit (Calprest) both performed at the third day of life in 12 healthy term jaundiced AGA newborns (total bilirubin 249 ± 39.75 micromol/l) and compared to that of 12 healthy term non-jaundiced AGA newborns (total bilirubin 83.79 ± 37.62 micromol/l) matched for sex, GA, birth weight and Apgar score. In the SAT, the urinary lactulose/mannitol ratio (L/M ratio) was measured after oral ingestion of a solution containing 8.6 g of lactulose and 140 mg of mannitol per 100 ml water at a dose of 2 ml/kg. Urine was then collected for five hours; lactulose and mannitol concentrations were measured by HPLC (high liquid phase chromatography) (mg/l) and L/M ratio calculated. The stool sample were treated and evaluated according to the manufacturer's instructions. Jaundiced newborns have a significantly higher L/M ratio than non-jaundiced mean 0.32 (sd ± 0.28) vs. mean 0.052 (sd ± 0.04) $p < 0.004$. A significant correlation was found between hyperbilirubinemia and L/M ratio. No difference was found between the value of FC in the two groups (mean 246 (sd ± 109) vs. mean 275 (sd ± 118)). We report for the first time a study, which demonstrated the direct effects of UCB on the small intestinal mucosa, showed by an increase of IP. We can also say that this direct damage to the small intestine mucosa, expose these healthy term newborns at many risks due to a facilitate passage of food allergens or bacterial antigens through the intestinal epithelial barrier.

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EFFECT OF UNCONJUGATED BILIRUBIN ON GASTRIC MOTILITY INTESTINAL PERMEABILITY (IP) AND FECAL CALPROTECTIN IN PRE-TERM NEWBORNS

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At present no data are available on the effects of unconjugated bilirubin (UCB) on the gut of the preterm. We evaluated 25 jaundiced preterm (12 male, GA 35.0 ± 1.0 wks, BW 2152.2 ± 301.3 g, serum bilirubin 201.7 micromol/L (range $97.4 - 265$). Gastric electrical activity was recorded by cutaneous electrogastrography (EGG module UPS 2020 - MMS) for 30 minutes before and one hour after formula feed and the following parameters evaluated: gastric frequency and power, instability coefficient of frequency and power, percentage of normal slow wave, bradygastria and tachygastria. The urinary lactulose/mannitol ratio (La/Ma ratio) was measured after oral ingestion of a solution containing 8.6 g of lactulose and 140 mg of mannitol per 100 ml water at a dose of 2 ml/kg. Urine was then collected for five hours; lactulose and mannitol concentrations were measured by HPLC (high liquid phase chromatography) (mg/l) and La/Ma ratio calculated. Fecal calprotectin (FC) was measured by an ELISA kit (Calprest) and the stool samples were treated following the manufacturer's instructions. In the preprandial period, serum bilirubin correlates positively with the percentage of normal slow waves ($r=0.60$; $p < 0.001$) and negatively with percentage of tachygastria ($r=0.42$; $p < 0.03$). Correlations were lost in the postprandial period. A multiple linear regression model showed that intestinal permeability (La/Ma ratio) (mean 0.25 ± 0.15) is influenced by both UCB and FC (mean 319.8 ± 4.5) ($r=0.51$; $p=0.03$). These data show that UCB affects IP, gastric motility and gut inflammation. We believe that UCB represents a condition of increased risk for preterms due to a complex involvement of the whole intestinal apparatus that has never been hypothesized before.

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MULTICHANNEL INTRALUMINAL IMPEDANCE (MII) TO DETECT RELATIONSHIP BETWEEN GASTROESOPHAGEAL REFLUX (GER) AND APNEA OF PREMATURITY (AOP)

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The relationship between GER and AOP in newborns is still controversial. The aim of our study was to assess if MII-pH study could be useful to detect the association between GER and AOP in a subgroup of preterms selected for the absence of confounding factors. Were included newborns who satisfied the following criteria: postnatal age less than 30 days, no response to conventional treatment of AOP, no ventilatory support, full enteral feeding (intermittent suckling bolus) and absence of known causes of AOP. Five newborns [3 M; median ga 32 weeks (range 29–36); bw 1740 gr (range 1300–2350); age at study 15 days (range 8–21)] underwent simultaneous 24hours recording of MII-pH, continuous pulse oximetry saturation and ECG. A reflux event (RE) was defined by MII when a fall in impedance $< 50\%$ from baseline occurred in at least the two distal channels in an aboral direction. A temporal association between RE and apnea and/or bradycardia was considered present if these events commenced within 20 seconds the onset of a RE. In the recording period a total of 285 RE [median rate of 55 per recording (range: 41–71)] and 115 apnoea [median rate of 24 per recording (range: 3–35)] were detected. Thirty-six AOP were associated with RE (31%). Frequency of events during RE was significantly greater than in reflux-free period [0.48/min (0 - 1.28) vs. 0.013/min (0.003 - 0.05); $p < 0.05$]. Out of 36 RE-associated apnea, 31 were not acid (86%). Frequency of events during non-acid RE was greater than in reflux-free period [0.38/min (0 - 1.3) vs. 0.004/min (0.02 - 0.036); $p < 0.05$]. No difference was found in the frequency of events associated and not associated with acid-RE.

Our data show that both AOP and GER were common in these infants and seem to be temporally related.

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INFLUENCE OF HUMAN MILK, STANDARD FORMULA AND FERMENTED FORMULA ON THYMUS SIZE AND STOOL PH IN HEALTHY TERM NEWBORNS.

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Breast fed newborns had significant larger thymus compared to that standard formula fed. We report for the first time a double blind study on healthy term newborns evaluating the effect of human milk versus a standard formula and versus a fermented formula (bifidobacterium c50 and Streptococcus thermophilus 065) on thymus index and stool pH. 90 newborns were enrolled in the study. 30

	WEIGHT	Breast feed	3189±327	3911±407	4904±455	5738±559
	6532±599					
	FF feed	3158±268	3922±352	4928±550	5746±666	6431±757
	SF feed	3113±268	3934±339	4897±460	5699±533	6445±519
	LENGTH	Breast feed	49.4±1.1	52.4±1.4	55.3±1.6	57.7±1.9
	59.8±2.1					
	FF feed	49.2±0.8	52.2±1.6	55.3±1.7	57.7±2.4	59.8±1.6
	SF feed	49.0±0.9	51.6±1.5	54.7±1.6	56.8±1.6	59.3±1.7
	HEAD C.	Breast feed	33.5±0.9	35.8±1.1	37.8±1.0	39.0±1.1
	40.4±1.3					
	FF feed	33.5±0.7	35.8±1.1	37.6±1.1	38.9±1.1	40.3±1.1
	SF feed	33.5±0.6	35.4±1.1	37.2±1.1	38.7±1.1	40.1±1.0
	THYMUS I.	Breast feed	4.61±0.77*	5.94±1.19*	7.09±1.29*	7.70±1.10*
	8.29±0.89*					
	FF feed	3.91±1.07	4.98±2.06	5.86±1.60	6.45±1.30	7.45±1.91
	SF feed	3.80±0.67	4.33±0.68	4.97±0.78	5.99±1.39	6.56±1.36
	STOOL pH	Breast feed	5.03±0.7	5.05±0.2	5.04±0.7	5.06±0.3
	5.04±0.4					
	FF feed	5.12±1.4	5.13±0.3	5.11±0.3	5.12±0.7	5.15±0.6
	SF feed	**5.86±1.7	**5.63±0.5	**5.93±0.7	**5.78±0.6	**5.83±0.7

newborns were exclusively breast fed, and the other 60 were randomly assigned to receive, a fermented formula, and a standard formula, with the same nutritional composition. All newborns were matched for sex birth weight and gestational age. The newborns were evaluated at third day of life, at first, second, third and fourth month of age. Weight, length, head circumference, stool pH, and ultrasound measurement of thymus size were recorded. Results are shown in table like mean and standard deviation.

*vs SF feed $p < 0.001$; *vs FF feed $p < 0.036$; vs SF feed $p < 0.042$; **vs Breast feed and FF feed $p < 0.001$.

Fermented formula resembles the breast fed pattern concerning thymus size and faecal pH while no difference was demonstrated in the growth parameters. These effects may be linked to the bifidogenic effects of fermentation products and their interactions with the intestinal immune system leading to a general involvement of the immune system. Further studies are needed to understand these relationships and to assess the role of colostrum in increasing thymus size.

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OBSTETRIC MANAGEMENT OF FETAL MACROSOMIA IN NON DIABETIC PATIENTS

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OBJECTIVE: We evaluated the obstetric management of fetal macrosomia in the physiologic pregnancy and the role of several maternal (age, weight, gestational age at delivery, gain during pregnancy) and fetal (gender, evaluation by ultrasounds of fetal weight) parameters on the maternal (type of delivery, induction of labor, episiotomy) and fetal (birth weight, Apgar-score at birth) outcome.

MATERIAL AND METHODS We investigated 5,062 pregnancies in 5 years (2000–2004) of whom 303 were classified as 'macrosomia' by ultrasounds.

RESULTS The incidence of fetal macrosomia does not change throughout the period evaluated. The 93% of pregnant women was Italian, 5% Extra-community and 2% European. The fetal macrosomia was more frequent in male than female (9.52% vs. 5.17%) with high incidence of cesarean deliveries (25.39% vs. 17.34%). The fetal weight is directly correlated with parity ($r=0.88$) and indirectly with maternal age ($r=0.91$); while the maternal weight is not directly correlated with fetal weight but it depends on maternal weight gain during pregnancy ($r=0.99$) except when the fetal weight was like or more than 4,500 grams. In this group of patients the highest incidence of cesarean sections and the lowest values of Apgar-score was found. The fetal macrosomia is the frequent indication of elective cesarean delivery. Our data demonstrate a significant decrease of cesarean delivery with an increase of vaginal delivery with episiotomy in fetal macrosomia. We have not found any case of shoulder dystocia.

CONCLUSIONS In the obstetric management of fetal macrosomia in physiologic pregnancy we don't evaluate only the fetal weight but several parameters independently to ultrasound evaluation of fetal weight.