97 EFFECTS OF TRANSIENT HYPERBILIRUBINEMIA ON OPEN-FIELD BEHAVIOR IN YOUNG RATS.

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Bilirubin has been shown to enter the brain both unbound, and bound to serum albumin. We have examined the open-field behavior of male Sprague-Dawley rats previously subjected to treatment known to cause bilirubin entry into the brain. There were 9 experimental groups, all of which, except group 9, had a jugular vein catheter placed at 5-6 weeks of age. The groups were treated as follows: group 1= bilirubin + hyperosmolality (carbamide 75 mM/kg); group 2= hyperosmolality; group 3 = bilirubin + hypercarbia (20% CO₂ in air for 1 hr); group 4= hypercarbia; group 5= bilirubin + sulfisoxazole (50 mg/kg); group 6= sulfisoxazole; group 7= bilirubin; group 8= no infusion; group 9= no catheter. Bilirubin was infused at 20 gm/kg/hr for 3 hours, giving serum bilirubin levels of appr. 200 uM. After a 3 week recovery period the rats were tested in 15 minute sessions, divided into 5 parts on 10 consecutive days in an open-field situation. The data were subjected to multivariate analyses with the SPSS program. Several significant trends were noted, indicating that elements of memory are tested in addition to activity level and motor function. The group and part of session interaction for group 7 was significantly different from group 1 and 3 as regards velocity in cage. The bilirubin-treated groups show increased velocity outside home cage when compared with controls, and there is a significant group and session by part of session interaction. The differences between the bilirubin-treated groups are subtle. Further studies focusing on other behavioral tests are needed to elucidate possible differences in neurotoxicity between bound and unbound bilirubin.

98 WEIGHT GAIN AND LINEAR GROWTH ARE INTERRUPTED BY AFRICAN MEASLES

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The nutritional sequelae of measles were quantified experimentally by studying energy balance during the illness, after recovery, and monitoring nutritional status during convalescence. The 24 hour intake of metabolisable energy by 20 black Kenyan children hospitalized by acute measles was calculated from the energy content of food, faeces and urine. This was determined by bomb calorimetry. The energy expenditure was measured at intervals by flow-over calorimetry. Nutritional status was measured by auxology, at the time of measles, at the control study approximately one month later and during home convalescence. The level of intake of metabolisable energy was significantly reduced during measles (81.5±17.5 compared with 338±28 kJ/kg.24h. M±SE). The mean level of resting energy expenditure was similar during the two studies (257±9.6 kJ/kg.24h. and 272±9.6 kJ/kg.24h. during measles and control studies respectively). During the control study 12 out of 18 children were in positive energy balance. In the control study a post prandial increase in metabolic rate and a high resting respiratory quotient (0.98±0.3 M±SE) were indicative of biosynthesis. These features were absent during measles. The results of auxology demonstrated that weight recovery during convalescence was accompanied by significant faltering in linear growth. Thus measles produces negative energy balance resulting in weight loss and faltering in linear growth.

99 OPSONIC ACTIVITY OF CORD BLOOD SERA AGAINST VARIOUS SPECIES OF MICRO-ORGANISMS

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In this study opsonic activity of fresh and heat inactivated cord blood (CB) sera for *S.aureus*, *E.coli* and group B streptococci concentrations of immunoglobulins and complement components as well as activity of the classical and alternative pathways of complement activation were investigated. The opsonic activity of a serum was determined as its capacity to promote ingestion of bacteria. Concentrations of IgA, IgM and IgG were measured by immunodiffusion. The activity of complement pathways was determined by hemolytic titration. The results showed that activity of heat inactivated CB sera in promoting phagocytosis was equal to that of sera of healthy adults which implies that IgG concentrations in CB sera and in adult sera represent functionally similar IgG activities. Ingestion of micro-organisms in the presence of fresh sera was found to be of the same level for CB sera and sera from adults when opsonisation occurred via the classical pathway of complement activation. However due to the decreased concentrations of factors B, P and D in CB sera, optimal opsonisation of micro-organisms requiring the alternative pathway of complement was impaired. These findings clearly show the need to determine the opsonising activity of serum for each specific micro-organism. A normal or defective activity of a serum for one organism does not predict its activity for other micro-organisms.

100 CONCENTRATION OF IMMUNOGLOBULINS IN MILK SECRETED BY MASTITIS AFFECTED BREAST GLANDS.

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The mammary glands act as an immune organ that is able to produce specific antibodies in response of antigens penetrating to the parenchyma of the gland by the blood, lymph or through the milk ducts. The concentration of immunoglobulins in blood sera and in milk samples obtained from the healthy breast as well as from the mastitis affected breast of 15 women from 20 to 120 days after birth was investigated. The concentration of all immunoglobulin classes under investigation was higher in milk samples from mastitis affected breast than in milk samples from healthy breast but statistically significant difference was established only in respect to sIgA which might be explained by its local synthesis as a result of antigenic stimulus. The higher concentration of the remaining immunoglobulin classes is a result of the enhanced permeability of the glandular epithelium with respect to serum immunoglobulins. It could be concluded that the human mammary gland is able to synthesize antibodies.

101 SECOND MESSANGER FUNCTION OF LIPOXYGENATION PRODUCTS IN HUMAN NK CELL KILLING.

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Human NK cells were tested in the presence of several fatty acid oxygenase inhibitors such as NDGA, ETYA, BW755C and Indomethacin. All drugs inhibited NK lysis at the post-target cell binding level at doses which also suppressed lipoxygenation of AA suggesting that such reactivity may be required for effector cell triggering. NDGA gave 50% NK cell inhibition and also suppressed antibody-dependent and lectin-dependent systems. NK activity could be reconstituted to NDGA suppressed effector cells with several metabolites such as LTB₄, LTB₄ analogues and HETE acids lipoxygenated at C-5, C-12 and C-15. cGMP and cAMP could also reconstitute the activity with optimal effect at approximately 10⁻⁸M. The combined evidences are compatible with a model for triggering of lysis in which lipoxygenation products have a second messenger function. NK cells may or may not produce these metabolites themselves which may be more or less important for triggering depending on the differentiation/activation state of the effector cells. The implication of these findings to human physio-pathology will be discussed.