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COMPARING THE BEHAVIOURAL EFFECTIVENESS OF TWO DRUGS WHICH HAVE DIFFERENT HALF LIVES. James Swanson, Laura Kurland, Fred Weinberg, and Marcel Kinsbourne

The Hospital for Sick Children, Research Institute, Toronto. Methylphenidate (Ritalin) and pemoline (Cylert) are short-acting stimulant drugs used extensively to treat hyperactivity and they have different serum half lives (6 hrs. versus 12 hrs.) Comparisons of these two agents are difficult because both the equivalent doses and dosing intervals must be determined for each drug before comparisons are made. We used a time response paradigm (described elsewhere) to determine that the dosing interval should be one half of the drug's half life to give smooth coverage in terms of the cognitive effect of these drugs on hyperactive children. We noted that the usual TID dosing schedule for Ritalin approximates this criterion, but that the recommended once-a-day dosing schedule for Cylert does not. This led to our present study, in which we tested 24 patients using a double-blind protocol. The Conners Hyperactivity Questionnaire, a side effects questionnaire, and a parent interview with a physician, were used to evaluate 4 one week treatments: Placebo, Ritalin (at established optimal dose, avg. = 12.1 mg. X3 per day) Cylert once a day (75 mg. AM) and Cylert twice a day (75 mg. AM, 37.5 mg. PM). Consistent with previous studies, the Cylert 1 treatment was found to be less effective than the Ritalin treatment and its weakness was localized in the afternoons, when the effect of the single morning dose was dissipating. The Cylert 2 treatment was slightly superior to the Ritalin treatment because it did not produce a "rollercoaster" effect as Ritalin did in some cases.

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ONE YEAR FOLLOW-UP OUTCOME OF VENTILATORY ASSISTED INFANTS (B.Wt. >1500 G) CORRELATED WITH PRENATAL AND PERINATAL FACTORS. Annabel Teberg, Paul Y.K. Wu,

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The risk potential of isolated prenatal or perinatal event is often inadequate and misleading in the prediction of long term prognosis. In order to assess the value of cumulative prenatal and perinatal factors as they relate to outcome, 42 infants (B.Wt. >1500 G) who received ventilatory assistance (VA) neonatally were compared to 42 non-ventilated matched controls (C). Matching variables were race, sex, gestational age and birth weight. Prenatal, paranatal and postnatal factors cumulatively were evaluated in conjunction with physical, neurological, audiological, ophthalmological developmental assessments in the VA and C infants at 1 yr. of age. The VA infants had significantly higher incidence of prolonged rupture of membranes, second and third trimester bleeding, stained amniotic fluid, lower Apgar scores, seizures, congenital heart disease, RDS, apnea, infection and blood transfusions associated with abnormal physical, neurological and developmental findings. Cumulative prenatal and perinatal data were arranged in a discriminating function and predicted whether or not the infant will require VA in 85% of cases. Multiple factors obtained cumulatively in the prenatal, paranatal and postnatal periods may be more useful in evaluation of risk factors for long term prognosis.

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GROWTH, HEALTH AND DEVELOPMENT AFTER TOTAL PARENTERAL NUTRITION - A LONG-TERM FOLLOW-UP.

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We have studied 26 children who received hyperalimentation during the immediate neonatal period. The follow-up ranges from four years to seven and a half years with a mean of five years. The indication for hyperalimentation was low birth weight in 80% of the patients, gut resection in 12% of the patients and intractable diarrhea in 7% of the patients.

At follow-up, 50% of the patients were >50th percentile by weight, and 38% were >50th percentile by height. Forty-two percent of the patients were <10th percentile for weight and 38% were <10th percentile for height.

Depending on the age, patients were given the W.P.S.S.I. or the W.I.S.C. and the D.A.P. and Bender tests. Only a third of the children had a full-scale I.Q. of 100 or more, another third had a full-scale I.Q. of 80 or less, and one child showed a moderate range of mental retardation with hydrocephalus secondary to hyperalimentation.

These findings are similar to those seen in low birth weight infants treated prior to hyperalimentation era, and suggest that the high calorie, high protein infusion, while providing rapid weight gain and reducing the hospital stay, does not spare the tissues or the brain from the deleterious effects of intra-uterine growth retardation.

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A FRESH LOOK AT EARLY MOTHER-INFANT CONTACT. Mary Anne Trause, John H. Kennell, Marshall H. Klaus. Case Western Reserve U., Dept. of Peds., Cleveland, Ohio.

Mothers who have early infant contact later behave differently with their infants than mothers with routine separation. Are these differences the result of the state of mother and infant? To determine the effects of maternal wakefulness during early contact 14 mothers who had their undressed babies in their beds for one hour within the first 3 hours after birth were compared to 14 mothers with routine contact. Early contact mothers were divided into 2 subgroups: those who fell asleep within 30 minutes of the beginning of their contact (n=6) and those who stayed awake (n=8). Using time-lapse photography, comparisons of maternal behavior were made: 1) while early contact mothers were awake during the first 10 minutes of contact and 2) during feeding at one month. In the first 10 minutes mothers who later fell asleep touched (p<.005) and looked at their babies significantly less (p<.005). Also the more mothers looked at their babies during the first 10 minutes, the less likely the mothers were to fall asleep by 30 minutes (r=.65, p<.01). During a feeding at 1 month, mothers who remained awake showed significantly more eye face (p<.01) and fondling (p<.01) than those who had fallen asleep and were similar to the 14 mothers with later contact (suggesting that maternal wakefulness during early contact is associated with later behavior). Mothers who stayed awake had received larger doses of analgesic drugs closer to the time of delivery. It is not known whether it is maternal state, motivation, intrapartum medication or infant state that mediate these differences at 1 month.

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ENHANCEMENT OF NUTRITIVE SUCKING PATTERNS IN PREMATURE INFANTS. Lonnie Trykowski, Barry Kirkpatrick, Robert Lamb and Elizabeth

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Peri-oral tactile stimulation has been used to enhance nutritive sucking in premature infants who have survived life-threatening illnesses in neonatal intensive care settings. Objective data for evaluation of such programs is scant. In 31 pts (\bar{x} g.a. = 32 wks, \bar{x} post-natal age = 34d) sucking patterns were recorded for Vol., Rate, and max. Pressure during 3 different 4 min feedings of formula. Recordings were made without stimulation (0), after stimulation (A) and during stimulation (D). Stimulation consisted of light-touch pressure over the buccinator and orbicularis oris muscles at a rate of 1/sec. for 3 min before feeding (Group A) or continuously during feeding (Group D). Each pt. acted as his own control. There were no differences in Vol., Rate, or Pressures in Group 0 vs. A, but significant differences were present in Group 0 vs. D.

| | Group 0 | ± SEM | Group D | ± SEM | P |
|-----------------------------|---------|-------|---------|-------|-------|
| Vol (ml/4 min.) | 23.4 | 2.3 | 27.9 | 2.0 | <0.05 |
| Rate/min | 21.9 | 2.0 | 27.7 | 1.8 | <0.05 |
| max P (cm H ₂ O) | 19.2 | 1.6 | 20.5 | 1.2 | ns |

Peri-oral tactile stimulation during feeding enhances nutritive sucking in premature infants.

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RELATIONSHIP OF PERINATAL EVENTS TO DEVELOPMENTAL OUTCOME. Christina Ukrainski, Jeffrey Pomerance,

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It is commonly accepted that an association exists between perinatal complications and neonatal morbidity. Infants who survive these complications are thought to be at greater risk for subsequent developmental handicaps. The ability to predict developmental outcome based on perinatal events might influence medical management in some neonates requiring continued intensive care.

Twenty-seven infants weighing ≤1000 gms. at birth with known developmental outcome were evaluated at 1 to 3 years of age corrected for prematurity. A modified version of the high risk scoring system of Hobel was employed retrospectively. The score consists of prenatal, intrapartum and neonatal factors which are assigned weighted values according to assumed risk.

Regression analysis of the neonatal score and developmental quotient (DQ) revealed a correlation coefficient of -0.55 (p<.01). Prenatal and intrapartum factors had no significant association with subsequent developmental outcome (r=+0.08).

A significant association was demonstrated between the neonatal high risk score and DQ. However, its predictive value requires further study. Multivariate analysis of the factors used in this scoring system and perhaps other factors may provide physicians and parents with more accurate prognostic information in assessing continuation of intensive support of the critically ill neonate.