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BRONCHOPULMONARY DYSPLASIA: AN UPDATE ON NUTRITIONAL ISSUES

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The continuous advances in the intensive care of preterm newborns have led to a progressive decline of mortality. However, the success in the survival achieved through an aggressive intensive care is not always paralleled by a subsequent fully healthy development of the newborn.

Bronchopulmonary dysplasia (BPD) is one of the conditions of morbidity due to the prematurity. Nutrition plays a critical role in the prevention and management of BPD. Malnutrition can worsen BPD by compromising lung growth: early postnatal nutritional deprivation causes a decrease of cell number due to suboptimal cell division. Moreover, drugs used in BPD therapy (corticosteroids, diuretics...) can have adverse effects on growth. This review focuses on the recommended nutritional intakes during the acute and chronic phase of the illness. Adequate intakes, and in the right timing, of fluid, parenteral nutrition with glucose, protein and lipids in the correct proportions, vitamin A supplementation and early enteral feeding may help decrease the incidence of BPD and may reduce its severity. A close monitoring of the biochemical nutritional indexes is also necessary to achieve adequate growth and to avoid nutritional deficiencies.

A careful post-discharge follow-up of these infants is necessary since the 67% of infants with BPD continue to have growth retardation after hospital discharge due to difficulties in ensuring adequate intakes (feeding difficulties, increased metabolic demands..).

We present our guidelines on recommended nutritional intakes after a careful review of all the scientific literature.

	TRANSITIONAL PERIOD	TRANSITIONAL PERIOD	MAINTENANCE PERIOD
	INITIATION	INCREMENTS	
Fluids (mL/Kg/day)	70 - 100	10 - 20	110 - 150
Calories (Kcal/Kg/day)	40 - 60	10 - 15	110 - 130
Carbohydrate (mg/kg/min)	4 - 6	1	10 -12
Protein (g/Kg/day)	3	0.5 - 1	4
Lipid (g/Kg/day)	0.5 - 1	0.5 - 1	3
Sodium (mEq/Kg/day)	minimal	2	3

[Recommendations for parenteral nutrition]

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CONGENITAL ANALBUMINEMIA: A SASKATCHEWAN CASE SERIES

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Background: Congenital analbuminemia (CAA) is characterized by the absence of serum albumin. Typically albumin is the most abundant protein in the circulatory system and provides 80% of the colloid osmotic pressure. Albumin is responsible for carrying many molecules through the circulation. Therefore it unexpected that survival without albumin is possible. The worldwide prevalence of CAA is estimated at 1 in 1,000,000. There are 43 cases of CAA reported internationally, but there is very little information known about the impact of the absence of albumin. We have identified a population in Saskatchewan with a high incidence of CAA. Our intent is to review these cases and determine whether CAA has an impact on these patient morbidity and/or mortality.

Methods: We identified thirteen cases of CAA from health records. Data collection included antenatal/obstetrical history, birth history, placental pathology, frequency of respiratory tract infections, frequency of hospitalization, complications during hospitalizations, co-morbid conditions, laboratory

investigations, clinical signs/symptoms suggestive of analbuminemia and cause of death (if applicable).

Results: CAA may predispose to preterm delivery, small for gestation infants and/or hydropic placentas. The cases had frequent admissions to hospital, primarily for respiratory tract infections. There were a high number of admissions to intensive care.

Conclusion: Our case series indicates there is an increase morbidity and possibly mortality associated with CAA. We are not able to make any conclusions on the long-term risks of CAA. This review provides support for a longitudinal study of this population of patients.

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GHRELIN MRNA AND PROTEIN EXPRESSION IN FUNDUS OF STOMACH IN POSTNATAL RATS BORN SMALL FOR GESTATIONAL AGE

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Objectives: To explore the changes of Ghrelin mRNA and protein expression in fundus of stomach of rats born small for gestational age (SGA) and to analyze the relationship with the catch-up growth of postnatal SGA rats.

Methods: The SGA and appropriate for gestational age (AGA) rat models were established by food restriction during pregnancy. The newborn rats were acquired after delivery, among which 10 rats were selected randomized from SGA group and control group at postnatal day 0, day 20 and day 40. The fundus of stomach were taken to determine Ghrelin mRNA and protein expression.

Results: At postnatal day 0, stomach fundus Ghrelin mRNA expression is higher in SGA rats than those in AGA rats. At postnatal day 20 and day 40, there is no significant difference in Ghrelin mRNA expression among SGA non-catching-up rats, SGA catching-up rats and normal AGA rats. At postnatal day 0, Ghrelin IOD in SGA rats is higher than that in AGA rats. Ghrelin IOD in SGA catching-up rats is higher than that in SGA non-catching-up rats and normal AGA rats ($p < 0.05$) at postnatal day 20, and there is no significant difference among them at postnatal day 40.

Conclusion: Ghrelin might be involved in the physiological regulation or pathological process

of IUGR, and intrauterine nutritional status or endocrine circumstances may have effects on the cells of gastric fundus of the fetuses, which results in the up-regulation of Ghrelin expression. Ghrelin might also be involved in the regulation of catch-up growth in their early life.

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BABY FRIENDLY PROGRAM AND DURATION OF BREAST FEEDING

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Winston Churchill: "The most favorable investment is feeding the child by breast feeding!"

Baby Friendly Hospital Initiative, started the World Health Organization and UNICEF in 1991, in order to ensure that maternity hospitals become centers of breast feeding support.

The aim: is to show how the program affected the length of breast feeding.

Methods: The sample represented newborn children in Belgrade maternity hospitals in the period from 2001 to 2009 involved in the BF program. Eight thousand infants were followed through the work of Belgrade health centers until the age of one year.

Results: Children born in 2001 were breast fed by the end of the first month in 65%, the third month 51%, by the end of the sixth month 32.6%, by the end of the ninth month 15.7% and by the age of one year old 1.3%. Each calendar year, the length of breast feeding increased in larger number of infants, so that 80.9% of children born in 2009 were breast fed until the end of their first month of life, 72.3% by the end of the third month, 49.8% by the end of the sixth month, 24.3% by the end of the ninth month and 1.8% by the age of one year.

Conclusion: The number of children being fed in a natural way until the age of six months is not satisfactory, but the attached analysis shows that the introduction of the BF program significantly influenced the length of breast feeding, which is extended.