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Recomendaciones Nutriológicas durante el Primer Año de Vida

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RECOMENDACIONES DE NUTRIMIENTOS Y PATRONES DE ALIMENTACIÓN EN EL PRIMER AÑO DE LA VIDA. CRITERIOS Y EXPERIENCIAS EN MÉXICO.

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A excepción de algunos estudios colaborativos desarrollados con el propósito de conocer el consumo de energía y proteínas en lactantes amamantados al pecho (Butte et al 1993), en México no se han hecho recomendaciones emitidas por grupos de expertos de agencias internacionales de tomar como paradigma la cantidad y calidad de los nutrimentos de la leche humana y su efecto sobre el crecimiento de los niños.

Conforme a este criterio, se acepta que en los primeros 4 a 6 meses del posparto la leche humana promueve satisfactoriamente el crecimiento corporal, y el desarrollo pleno de las habilidades psicomotrices de los niños que son alimentados al pecho en esta etapa de la vida, las recomendaciones tienen como punto de referencia las concentraciones de nutrimentos energético, plásticos y reguladores, contenidos en un volumen de 750 ml. de leche.

A pesar de que en este concepto sirve de fundamento a la mayoría de los estudios, hay discrepancias en las estimaciones acerca del consumo de nutrimentos entre unos y otros grupos de investigadores. Así, por ejemplo, las recomendaciones de energía para los niños norteamericanos (RDA 1989) parten de considerar que en el primer semestre de la vida los lactantes ingieren, como término medio, un volumen de 750 ml/día y en los siguientes 6 meses 600 ml/día; en base a esta presunción se han sugerido 108 kcal/kg/día en los primeros 6 meses y 98 kcal/kg/día en el segundo semestre. Otros autores (Whitehead y Paul 1981), han hecho uso un método factorial para analizar los datos de un estudio prospectivo y de esta manera han estimado que el promedio en el consumo de energía varía entre 104 kcal/día a los 2 meses y 87 kcal/día a los 6 meses. Con el mismo propósito (Prentice et al 1988) se ha empleado agua doblemente marcada, y se ha estimado que las RDA exceden hasta en 15% la energía que precisan los niños para crecer normalmente durante el primer año de la vida.

En lo que atañe a las proteínas, las observaciones hechas en lactantes amamantados al pecho han permitido estimar, como término medio, que el volumen diario de leche que ingieren disminuye de 180 ml en el primer mes a 130 ml en el tercero y a 115 ml en el quinto (Raiha, 1985). Asumiendo el consumo de estos volúmenes y tomando en cuenta las observaciones de que sólo 9 g/dl de las proteínas de la leche humana están disponibles para cubrir las necesidades nutrimentales (Lonnerdal et al 1976), se ha calculado que en el primer mes de vida los niños consumen 1.62 g/kg, y a los 5 meses 1.03 g/dl, si son alimentados al pecho; las recomendaciones (RDA) son de 2.2 g/kg en el primer semestre y 1.6 g/kg/día en el segundo. Otros autores (Butte et al 1984) estiman que en el primer trimestre los niños necesitan para crecer satisfactoriamente, 1.68 g/kg. Por su parte, un grupo de expertos (OMS/FAO/UNU 1985) ha calculado con un procedimiento factorial, que entre los 3 y 6 meses de la vida las recomendaciones son del orden de 1.73 g/kg/día; este Grupo consideró como proteínas de referencia las del huevo o las de la leche de vaca.

RECOMMENDATIONS FOR FEEDING NORMAL INFANTS

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Infants should be breast fed or formula fed until one year of age.

Management of the breast-fed infant will be covered in some detail. Because several of the recommendations for breast-fed infants also apply to formula fed infants, management of formula-fed infants will be discussed only briefly.

BREAST-FED INFANTS
Breast feeding should be actively encouraged, but women should not be coerced to breast feed.

(1) An injection of vitamin 1 mg of vitamin K oxide should be given as soon as possible after birth. If the infants is born at home, 2 mg of vitamin K oxide may be given orally.

Infants are born with low stores of vitamin K and the amount of vitamin K provided by breast feeding is not enough for some infants.

A number of body proteins, including some that are involved in blood coagulation, require vitamin K for conversion to the active form.

If vitamin K is not given, some breast-fed infants will develop hemorrhagic disease of the newborn with bleeding during the first week of life, most commonly in the form of echymoses or bleeding from the umbilical cord or gastrointestinal tract on the 2nd to 4th day of life.

Infants born to women who are being treated with anticoagulants or anticonvulsants are at much greater risk of bleeding than other infants, and the bleeding may occur on the day of birth. When possible, women being treated with anticonvulsants shouls be given vitamin K orally beginning at about the 38th week of gestation.

If vitamin K is not given to breast-fed infants soon after birth and of bleeding does not occur during the first week, it is still possible that a bleeding episode will occur later, most commonly at 4 to 6 weeks of age (late-onset hemorrhagic disease of the newborn). Bleeding is often intracranial and the outcome is poor.

(2) On the day of birth or the next day, the mother should be instructed about simple procedures that will help to avoid the possibility that the infant will develop dehydration or failure to thrive:

The mother should be able to hear sounds of swallowing during the feeding.

During the first 5 days the infant should be offered the breast every 4 hours.

By the 3rd day of life there should be at least 4 quite damp diapets each day.

A health professional should review with the mother (in person or by telephone) the progress of the breast feeding.

(3) When breast feeding os progressing well (ussualy by the end of the first week) a to stop nursing at the earliest indication of willingness to stop major effort should be made to teach eating in moderation. The infant should not be encouraged to take the largest amount he is willing to take at a feeding but should be encouraged.

(4) A daily supplement of iron (e.g., 7 mg of iron in the form of ferrous sulfate) should be given.

Although the iron of human milk is exceptionally weel absorved, the iron content of the milk is low and the quantity absorved is only a fraction of the infant's requirement for absorved iron.

Without supplementation, iron stores of some breast-fed infants

will be developed by 4 to 6 months of age.

As a rational public health precedure, the iron supplementation of breast-fed infants have not been demonstrated.

(5) A daily supplement of 400 IU of vitamin D should be given. Because there is no commercially available preparation containig only vitamin D and iron, it is reasonable to give a drop preparation containing vitamins A, C, D and iron.

Infants who are protected from exposure to the sun and who do not receive a supplement of vitamin D are at risk of developing rickets.

(6) If breast feeding is supplemented with formula feeding, it is preferable to use an iron fortified formula.

(7) Beikost (foods other than milk or formula) should be introduced when the infant can sit with support and has good control of head and neck, a development stage that is usually reached by 4 to 5 months of age.

At this satge of development readiness, the infant will be able to indicate to the individual feeding him whether he wants the food that it is offered. Befor this stage of readiness is reached, feeding of beikost is likely to undermine the parents' efforts to instill habits of eating in moderation.

FORMULA-FED INFANTS

(1) An injection of vitamin 1 mg of vitamin K oxide should be given as soon as possible after birth. If the infant is born at home, 2 mg of vitamin K oxide may be given orally.

As is the case with breast-fed infants, infants born to women who are being treated with anticoagulants or anticonvulsants are at much greater risk of bleeding than other infants, and the bleeding may occur on the day of birth. When possible, women being treated with anticonvulsants should be given vitamin K orally beginning at about the 38th week of gestation.

In the absence of diseases in which fat absorption is poor, late onset hemorrhagic disease of the newborn does not occur in formula-fed infants.

(2) An iron-fortified formula should be fed until 1 year of age. Several studies have failed to demonstrate that feeding of an iron-fortified dormula is associated with fussiness, constipation, loose stools or other adverse effects.

As with the breast-fed infant, after the first week of life the infant should be ancouraged to stop eating at the earliest indication of willingness to do so.

(3) There is no need to supplement with vitamins or minerals.

(4) As with the breast-fed infant, beikost should be generally be introduced at 4 to 5 months of age and the individual feeding the infant should avoid overfeeding.

OBJECTIONS TO FEEDING COW MILK DURING THE FIRST YEAR

(1) Because milk or formula is a major component of the infant's diet, and because cow milk is a poor source of iron, feeding of cow milk to infants almost always results in very low iron intakes.

(2) In some apparently normal infants, feeding of cow milk provokes nutritionally significant intestinal blood loss.

(3) Cow milk contains large amounts of calcium and cow milk proteins, which are potent inhibitors of iron absorption. Therefore, cow milk interferes with absorption of iron contributed by other foods.

(4) Feeding of cow milk provides a low margin of safety with respect to water balance. When an infant is ill and milk intake is decreased, dehydration will occur more rapidly if the infant is fed cow milk than if he is breast fed or formula fed. This consideration is particulary important for infants less than 8 months of age.

ENERGY AND PROTEIN REQUIREMENTS IN INFANCY

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The recommendations for energy and protein requirements in infancy made by the International Expert Consultation in 1985 (FAO/WHO/UNU, 1985) and more recently updated (IDECG, 1996) were made on the assumption that these recommendations are for optimal growth and health of infants. A better understanding of the changes in the recommendations, particulary for the energy requirements of infancy, made by the recent meeting of experts (IDECG, 1996), is only possible if a critical assessment of the current reference standards for infant growth used by International Agencies such as WHO is attempted.

REFERENCE STANDARDS FOR INFANT GROWTH

A recent evaluation of infant growth by a WHO Working Group (1994) specifically quiestions whether the infant portion of the NCHS-WHO Reference for growth should be used to assess adequacy of infant growth. The main objection to use of this portion of the Reference standards is that it is entirely based on the Fels Longitudinal Study which documented the growth patterns of predominantly Caucasian, middle class, artificially fed infants. This question gains considerable import and relevance in view of the established benefits of breast feeding during the infancy, the lower requirements ef energy based on energy intakes (and energy expenditures) of breast fed babies and the growing evidence of considerable healthy deviations form currently accepted growth references. The working group provided conclusive evidence that infants fed according to WHO recommendatios and living under consitions that favour optimal health and the achievement of the genetic growth potential grow less rapidly than and deviate from the current reference. The current growth reference standards are hence inadequate and of limited value during infancy and there is a need to develop a new, international reference for infant growth.

ENERGY REQUIREMENTS OF INFANCY

The recommendations for energy requirements of infancy made by the Expert Consulation in 1985 (FAO/WHO/UNU, 1985) were based in energy intakes compiled by Whitehead and Paul (1981) and the estimated energy requirements were set 5% higher than the observed energy intakes to compensate for underestimation of intake. This approach made the implicit assumption that ad libitum intakes of infants reflected their desirable intakes and was not influenced by external factors since it was likely to be largely self-regulated. More recent data on energy intakes of infants has been compiled (Butte, 1996). The new data sets also demonstrate the earlier observation of Whitehead (1981) of a decreasing need for energy in the first half of infancy, followed by an increase in need in the later half of infancy. Breast milk intakes measured by test weighing were corrected for insensible water loss (5%) and metabolizable energy (94% of gross energy). Energy requirements of infancy estimated from intakes (assuming 50% of infants were breast fed and 50% formula fed) indicate that the FAO/WHO/UNU (1985) recommendations were 2-15% higher than recent estimates. The energy intake (both absolute and when expressed as kCals per kg per day) show marked differences between breast and formula fed infants; breast fed infants generally showing lower intakes than the formula fed.

With the increasing emphasis on measures of energy expenditure being relied upon to arrive at estimates of energy requirements, emerging recent data on the total energy expenditure (TEE) measurements of infants using the Doubly labelled water (DLW) method are being considered. The TEE of healthy, normal infants who were breast fed were lower than those of formula fed infants; 69.2 kCal/kg/day vs 76.6 kCal/kg/day respectively. Since observed energy intakes may not reflect desirable intakes, measures of TEE are the preferred basis for estimating energy requirements even in infancy. TEE also accounts for physical activity and the energy costs of growth. The current data on TEE suggests that the energy requirements of infants recommended by the FAO/WHO/UNU (1985) are over estimates and need to be revised downwards. They also aupport the observation of a lower energy intake among breast fed healthy infants when compared with the formula fed infant. Given the relative uniformity of growth and physical activity of healthy infants from

different regions of the world, these estimates of energy requirements can be applied universally. It would appear that these revised recommendations for requirements of energy for alrgely breast infants are in keeping with the recognised need to revise the growth references of such healthy infants.

PROTEIN REQUIREMENTS OF INFANTS

The 1985 report (FAO/WHO/UNU) used the breast fed infant (0-6 months old) as the model for the estimation of protein requirements of infants. The retionale for this approach was the assumption that the protein needs of an infant were met if its energy needs are met and the food that provides the energy contains protein in quantity and quiality equivalent to that of breast milk. This approach has been criticised and that suggestion made that the composition of breast milk (and its protein content) represents an evolutionary compromise between the needs of the infant and the mother (Fomon, 1993). Recent estimates of protein intakes of infants (Dewey et al, 1996) indicate that the protein intakes (expressed in gm/kg/day) are substantially lower (between 10-26%) than those recommended in 1985 (FAO/WHO/UNU). The protein intakes at 1.95-2.04 gm/kg/day at 1 month dropping to 1.05-1.16 gm/kg/day at 4-6 months, are between 0.20 to 0.46 gm/kg/day lower than the 1985 estimates. Revised estimates of protein requirements and safe levels of intakes of older infants using the factorial approach (limmited by its many assumptions) auggest that they are lower by 27 to 35% of the 1985 recommendations. Experimental comparisons of exclusively breast fed infants with those who received additional supplements of prepared solid foods demonstrated no differences in growth rate despite the fact that the latter group received 33% more protein but were matched for energy intake. It has also been suggested that an operational approach may be considered for estimating protein requirements of infants using the protein-energy rations of breast milk. This method is perhaps limited to setting safe levels of intake while sidestepping tha main issue of defining minimum protein requirements for infancy.