

VITAMIN 'A' AND INFECTION

Pages with reference to book, From 115 To 116

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Vitamin 'A' a fat soluble vitamin is found in liver, poultry, meat and dairy products. It is also synthesised in the gut by the conversion of carotene present in green leafy vegetables, red palm oil and yellow fruits. Ninety percent of Vitamin 'A' is stored in the liver and it takes many months before signs and symptoms of deficiency appears. Plasma vitamin 'A' levels are a useful indicator of its levels within the body. Its deficiency can occur from either a deficient intake or an increase in metabolic demands.¹ Complete exhaustion requires many months of severe malnutrition: In developed² and developing countries³⁻⁵ most of the children under 15 years of age have a low Vitamin 'A' level probably due to a deficient intake. According to IVACG6 criteria an intake of less than 200mcg/day results in severe vitamin 'A' deficiency. In Pakistan low levels (30mg%) of Vitamin 'A' have been reported in children under 15 years⁷⁻¹² 42 of age, similar results have been reported from other countries.^{13,14} According to WHO and PAHO criteria these children are at risk of developing the complications of Vitamin 'A' deficiency.¹⁵

Vitamin 'A' deficiency is one of the most important paediatric nutritional problem.¹⁶ Children of low socioeconomic group are prone to suffer from diarrhoeal diseases and respiratory infections¹⁷ because of a deficient caloric plus Vit. 'A' intake. Repeated attacks may adversely affect Vitamin 'A' stores.¹⁸ Availability of stored Vitamin 'A' will also depend upon the nutritional status because a severely malnourished protein deficient child will synthesise rational binding protein at a reduced rate. Diseased liver cannot store much Vitamin 'A' or make rational binding protein at a normal rate, but storage is enhanced with a high protein diet.¹⁹ In diarrhoeal disease due to parasitic infestation (mainly giardiasis) absorption of this vitamin is impaired but marked improvement occurs after therapy.²⁰⁻²¹ In infection Vitamin 'A' is excreted partly as such and partly in the form of degraded products. Experiments have shown that rats deficient in Vitamin 'A' were more susceptible to infection by *Angiostrongylus cantonensis* than controls, and more larvae penetrated the intestinal mucosa; because Vitamin 'A' which maintains the morphological and functional integrity of the mucosa was depleted²². Vitamin 'A' deficiency does not occur as an isolated problem but is almost invariably accompanied by protein calorie malnutrition (PCM) and infection. PCM may interfere with normal metabolism and transport of vitamin.²³ Many aspects of immune response are depressed in experimental animals that have been made Vitamin 'A' deficient. In children with measles, Kerato conjunctivitis leading to blindness has been observed and in some cases Vitamin 'A' was recognized as a contributory factor. Frequent occurrence of a variety of common infection occurs in children with this disease.²⁴ Xerophthalmia is the most widespread and serious nutritional disorder which occurs due to decreased supply of Vitamin 'A' to ocular tissues. Children with Xerophthalmia frequently have a recent history of diarrhoea, respiratory disease and passing of worms. Anaemia might also be associated with Vitamin 'A' deficiency but it is often masked by dehydration. Dehydrated children often have a very low liver reserves of Vitamin 'A'.²⁵

Diagnosis of Vitamin 'A' deficiency can be made by observing the deficiency signs and symptoms and plasma retinol concentration but the best criteria is the estimation of Vitamin 'A' in liver.²⁶

Vitamin 'A' deficiency can be prevented by introducing Vit. 'A' and carotene containing food stuffs to the diet. Distribution of Vitamin 'A' capsules may reduce overall child death rate among children above

one year of age, hence increasing Vitamin 'A' intake may be the most practical and effective means for improving child survival. Children at risk of Vitamin 'A' deficiency should be given 200,000 IU of Vitamin 'A' capsules every three to six months²⁸. In developing countries where diarrhoea and malnutrition are rampant prompt administration of Vitamin 'A' is highly effective in preventing blindness.²⁹ In addition to Vitamin 'A' supplement, immunization, exposure of mother to health education and a change in eating habits are necessary.

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