

Vitamin A Deficiency Eye Disorders In Children: An Overview

Dr. Geetanjali Srivastava¹, Dr. Yogesh Badani²

¹Senior Resident, Department of Paediatrics, Neonatology & Adolescent Medicine, BLK Hospital, New Delhi, Delhi 110075, India

²Consultant Paediatrics, Kachhatiya Hospital, Near Rajkot Bhavnagar Highway, Amreli, Gujarat, India

Abstract: Vitamin deficiency continues to be one of the most prevalent nutritional deficiency diseases and most common preventable cause of blindness. This observational was conducted to study the clinical profile of vitamin A deficiency disorders among children less than 12 years of age. Out of the total 224 patients 127(56.69%) patients were of 5-10 yrs age. Male to female ratio was 1.6. In clinical presentation of vitamin A deficiency eye disorder conjunctival xerosis was found in 109(48.66%) that had maximum occurrence followed by bitot spot 57(25.44%) , corneal xerosis 38(16.97%) , night blindness 15(6.7%) and keratomalacia 5(2.23%). Out of 101 patients of under 5 year age , associated protein energy malnutrition was found in 77(76.2%) patients while , Out of 123 patients of over 5 years age , associated undernutrition was found in 70(56.9%) patients. 127(56.69%) cases were partially immunized, 71(31.69%) were fully immunized and 26(11.6%) were unimmunized. Those cases who had not taken vitamin A in the last 12 months 118(52.67%) has developed signs of vitamin A deficiency. It was low in those who had taken 97(43.3%). From this study the incidence of eye disease in patients of vitamin A deficiency was high among school age and male gender with conjunctival xerosis being the most common manifestation. Was more common among malnourished , unimmunized patients and those who had not taken any supplements of vit. A in the last 12 months.

Keywords: vitamin A, blindness , xerosis , undernutrition , unimmunized

1. Introduction

Vitamin A is a fat soluble vitamin, required throughout the life cycle, beginning from embryogenesis to maintenance of epithelial functions , acting as an effective barrier against pathogenetic effect¹ .it also regulates immune system and is required for growth , reproduction , cellular differentiation and hematopoiesis. Blindness is defined as a corrected visual acuity of less than 3/60 in the better eye and severe visual impairment as a corrected visual acuity in the better eye of less than 6/60-3/60². Most characteristic and specific signs of vitamin A deficiency are eye lesions involving sclera , cornea , conjunctiva. An estimated 250 million pre school children are vitamin A deficient , half of them dying within 12 months of losing signs³. The number of blind children worldwide is approximately 1.4 million , 75% of them living in developing countries⁴ . Since the launch of vitamin A global initiative in 1998 supplements are combined with immunization. Between 1998 and 2000 about a million child deaths are prevented⁵.

Ocular manifestations of vitamin A deficiency is following⁶-

XN	Night Blindness
X1A	Xerosis Conjunctiva
X1B	Bitot spots
X2	Xerosis Cornea
X3A	Corneal ulceration
X3B	Keratomalacia
XS	Corneal scarring
XF	Fundoscopic changes

According to the Vitamin A Prophylaxis Programme , children between 9 months and 5 years are given 9 mega doses of vitamin A concentrate at 6 months interval. The first two doses are integrated with measles vaccination and DPT 1st booster.

2. Methods

This was an observational study conducted at the Department of Paediatrics at a tertiary care centre , from may 2009 to October 2011. The aim was to study the incidence vitamin A deficiency eye disorders among admitted patients, the clinical features of vitamin A deficiency and its co relation with nutritional status and with immunization. All patients of age upto 12 years having eye diseases were included in the study. Written and informed consent was obtained from the parents before inclusion the study. Detailed history was elicited and physical examination done with special focus on vitamin A deficiency symptoms and signs and malnutrition. Expert opinion and specific treatment as advised by ophthalmologist are taken. Immunization status was confirmed by immunization card and the patient was considered immunized only if record was available.

3. Results

The incidence of vitamin A deficiency is high among school age children. Out of the total 224 patients 127(56.69%) patients were of 5-10 yrs age. Table 1.

No. of Male were 138(61.6%) and female were 86(38.4%) out of 224 patients, with male to female ratio of 1.6. Table 2. In clinical presentation of vitamin A deficiency eye disorder conjunctival xerosis was found in 109(48.66%) that had maximum occurrence followed by bitot spot 57(25.44%) , corneal xerosis 38(16.97%) , night blindness 15(6.7%) and keratomalacia 5(2.23%). Table 3.

Out of 101 patients of under 5 year age , associated protein energy malnutrition was found in 77(76.2%) patients while ,

Out of 123 patients of over 5 year's age, associated under nutrition was found in 70(56.9%) patients. Table 4.

Out of 224 cases of vitamin A deficiency 127(56.69%) cases were partially immunized, 71(31.69%) were fully immunized and 26(11.6%) were unimmunized. Table 5.

Those cases who had not taken vitamin A in the last 12 months 118(52.67%) has developed signs of vitamin A deficiency. It was low in those who had taken 97(43.3%). Table 6.

4. Discussion

Vitamin A deficiency is the leading cause of preventable blindness in children and increases the risk of disease and death from severe infections especially after common childhood infections diarrhoeal disease and measles.

In 1998 WHO and its partners UNICEF etc launched the Vitamin A Global Initiative-provide support to countries in delivering Vitamin A supplements.

In our study the incidence of vitamin A deficiency is higher among school aged children 56.9% , which is nearly similar to study done by Asrat YT , Arssi Zone , Etiopia showing incidence of 51%.

Vitamin A deficiency eye disorders had a male preponderance with a male to female ratio of 1.6. Occurrence of conjunctival xerosis was maximum among the patients as ocular manifestation followed by bitot spots⁸ which is consistent with WHO factsheet 1995. In our study vitamin A deficiency was prevalent amongst children who had not taken vitamin A supplement which is well supported by the UNICEF factsheet 2013⁹. Vitamin A deficiency eye disorders were found to be more among patients of protein energy malnutrition and undernourishment¹⁰ along with other micronutrient deficiencies.

5. Tables

Table 1: Incidence (age wise)

Age (years)	Patients	Percentages (%)
<5	74	33.03
5-10	127	56.69
>10	23	10.26

Table 2: Incidence (sex wise)

Disease	Male	Female
Vitamin A deficiency	138(61.6%)	86(38.4%)

Table 3: Clinical presentation of Vitamin A deficiency

: Night blindness	15(6.7%)
Conjunctival xerosis	109(48.66%)
Bitot spots	57(25.44%)
Corneal xerosis	38(16.9%)
Keratomalacia	5(2.23%)

Table 4: Incidence (PEM/Undernutrition)

Age group	Total patients	PEM/Undernourishment
<5 yrs	101	77(76.2%)
>5 yrs	123	70(56.9%)

Table 5: Immunization status:

Unimmunized	Partially immunised	Fully immunised
26(11.6%)	127(56.69%)	71(31.69%)

Table 6: Vitamin A supplement in the last 12 months:

Yes	97(43.3%)
No	127(56.7%)

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Author Profile

Dr.Geetanjali Srivastava M.D. Paediatrics from B.J.Medical College , Ahmedabad. She is Senior Resident at B.L.Kapoor Super Speciality Hospital, New Delhi, India.

Dr.Yogesh Badani M.D. Paediatrics from B.J.Medical College , Ahmedabad. He is Consultant Paediatrics at Kachhatiya Hospital, Amreli, Gujarat, India.