

Classification of 154 clinical cases of Vitamin A Deficiency in children (0-15 years) in a tertiary hospital in North West Frontier Province Pakistan

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Abstract

Objective: To share our experience of 154 cases of clinical vitamin A deficiency in Pakistani children.

Methods and Results: The data on age, sex, date of presentation and clinical stage of vitamin A deficiency was recorded. A total of 154 children aged 0-15 years suffering from clinical vitamin A deficiency (xerophthalmia) were recorded. One hundred and twenty three (79.9%) children were 0-6 years with 99 (64.3%) male children. Blinding xerophthalmia (corneal xerosis, corneal ulcers and keratomalacia) was present in 94 (61%) children. Thirty nine percent children presented in summer, 28% in autumn, 20% in winter and 13% in spring respectively.

Conclusion: This report indicates that clinical cases of vitamin A deficiency in children do occur in Pakistan. Children under 6 years of age are the most vulnerable age group and there is a seasonal variation in presentation. Both life and sight of these children are at risk. Community based studies may be helpful to identify the magnitude of the problem and possible risk factors at national, provincial and district levels (JPMA 55:77;2005).

Introduction

Pakistan has the highest infant mortality and under five mortality (83.3 and 110 per thousand) in the region with strong relationship to poverty and malnutrition in both children and women of reproductive age.¹

Several reports suggest that all else being equal, xerophthalmia can increase the risk of mortality among malnourished hospitalized children.^{2,3} Vitamin A deficiency (VAD) is a systemic disease that affects cells and organs throughout the body. There are varying degrees of VAD, sub-clinical and clinical. In sub-clinical VAD, the levels of vitamin A are reduced in body stores and serum. It leads to metaplasia of epithelial cells in body tissues and organs. Clinical VAD is called xerophthalmia. It may be blinding or non-blinding. Night blindness and Bitot's spot constitute non-blinding xerophthalmia. Corneal xerosis, corneal ulcers, keratomalacia and corneal scars are manifestations of blinding xerophthalmia.⁴ Even at sub-clinical levels it contributes significantly to morbidity and mortality from common childhood infections.⁵

Vitamin A supplementation has shown reduction in mortality of pre-school age children from 7% to 56%⁵⁻⁷ in areas of vitamin A deficiency.

Very few reports of clinical cases have been published from Pakistan. Molla A et al have reported that 43% children under 5 have deficient serum vitamin A levels in the urban slums of Karachi.⁸

World Health Organization (WHO) has put Pakistan into the group of countries where severe sub-clinical vita-

min A deficiency (VAD) exists and poses a significant Public Health problem in part or whole of the country.⁹ However there was a general feeling among Ophthalmologists, Pediatricians and general doctors that vitamin A deficiency does not occur in Pakistan.

The objective of this report was to share our experience with physicians / health care workers regarding occurrence of clinical cases of vitamin A deficiency in Pakistani children, age and sex distribution, seasonal variation in presentation and management of such cases.

Methods and Results

The data on age, sex, date of presentation and clinical stage of xerophthalmia was collected in a register. All suspected cases of Vitamin A deficiency presenting to various eye/pediatrics departments were referred to the authors for confirmation and management. Data entry and analysis was done in Epi Info 6.04b.

A total of 154 children aged 0-15 years suffering from clinical xerophthalmia were examined from July 1992 till January 1996. One hundred and twenty three (79.9%) children were age 0-6 years of which 21 (13.6%) were in the age group 0-12 months. Twenty (13%) children were 7-10 years of age and 8 (5.8%) children were 11-15 years of age. Age records were not available for 3 (1.9%) children. Male children were 99 (64.3%) and female children 55 (35.7%). Blinding xerophthalmia (corneal xerosis, corneal ulcers and keratomalacia) was present in 94 (61%) children. Non-blinding xerophthalmia (night blindness and Bitot's spots) was present in 60 (39%) children. Seventy three children (77.6%) out of 94 with blinding xerophthalmia were 3 years of age or less ($p < .001$).

Table. Distribution of vitamin A deficiency by gender and clinical classification VAD (p value 0.003).

Condition	Male n=99	Female n=55	Total n=154
Night Blindness	21 (21.2%)	7 (12.7%)	28 (18.2%)
Bitot's Spot	27 (27.2%)	5 (9%)	32 (20.8%)
Blinding Xerophthalmia	51 (51.5%)	43 (78.1%)	94 (60%)
Total	99 (100%)	55 (100%)	154

Figure. Seasonal variations in presentation of vitamin A deficiency cases in NWFP Pakistan.

Night blindness was present in 21 (75%) male children and in 7 (25%) female children. Bitot's spots were present in 27 (84.4%) male children and in 5 (15.6%) female children. Blinding xerophthalmia was present in 51 male children and 43 female children (P value 0.003) (Table).

Thirty nine percent children presented with xerophthalmia in summer followed by 28% in autumn, 20% in winter and 13% in spring respectively.

All children suffering from VAD were given vitamin A 200,000 international units (half of this dose to children less than 1 year or 8 Kg of body weight) on 1st day, 2nd day and after 2 weeks according to standard protocol recom-

mended by WHO. Systemic diseases and other associated ocular morbidity were treated accordingly.

Comments

This study indicates that clinical vitamin A deficiency in children exists in Pakistan. At present we do not know whether it is a public health problem or not. Children under 6 years of age are the most vulnerable group. Both life and sight of these children are at risk. Awareness among the health care workers is needed to enhance their understanding of VAD and its consequences. Pediatricians, ophthalmologists, general physicians and other cadres of health care workers involved in child health care should be made aware of this problem.

Community based studies are urgently needed to identify the magnitude of the problem and possible risk factors at national, provincial and district levels. A surveillance system with a district focus involving ophthalmologists and pediatricians may be helpful in identifying districts with major disease burden. As mass supplementation programme has been in place in the country since 1999, a system is needed to show the impact of this initiative by monitoring the changing trends in the natural status of vitamin A and other micronutrients.

References

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