International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2020): 7.803

Bitot's Spots; Ocular Manifestation of Vitamin A Deficiency among School Children: A Case Report

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Abstract: ***Vitamin A deficiency is an important health problem among children with significant morbidity and mortality. Xerophthalmia is the clinical spectrum of ocular manifestations of vitamin A deficiency; these range from the milder stages of night blindness and bitot's spots to the potentially blinding stages of corneal xerosis, ulceration and necrosis (keratomalacia). Early detection, treatment and prevention of the illness can save vision and life of hundred thousand of children.***

Keywords: Bitot's spots, vitamin A deficiency, night blindness

1. Introduction

Vitamin A deficiency (VAD) is an important public health problem worldwide that contributes significantly to the global burden of disease. Vitamin A is a fat-soluble vitamin that is important for many bodily functions, including proper vision, a strong immune system, reproduction and good skin health. Vitamin A is not a single compound. Rather, it is a group of fat-soluble compounds collectively known as retinoids. The most common dietary form of vitamin A is retinol. Other forms retinal and retinoic acid are found in the body, but absent or rare in foods. Those at highest risk of deficiency are pregnant women, breastfeeding mothers, infants and children. Vitamin A deficiency is very prevalent and contributes substantially to morbidity and mortality among young children in developing countries. Although a national vitamin A prophylaxis programme has been in operation for more than three decades, vitamin A deficiency continues to be a major nutritional problem of public health significance in India. In children, VAD is the leading cause of preventable visual impairment and blindness [1]. An estimated 2, 50,000 to 5, 00,000 children become blind every year globally due to VAD, with around half of whom die within a year of becoming blind. Xerophthalmia is the clinical spectrum of ocular manifestations of vitamin A deficiency; these range from the milder stages of night blindness and bitot's spots to the potentially blinding stages of corneal xerosis, ulceration and necrosis (keratomalacia). The various stages of xerophthalmia are regarded both as disorders and clinical indicators of vitamin A deficiency [2].

2. Case Report

During my posting as medical officer at block Shahpur, I have privilege to go to school health camps and examine school children of various schools in my health block. Here I came across with two school children showing signs of vitamin A deficiency.

[1] A 7 years old male child was seen during school health camp in a primary school. While examining child, it was noticed that child sclera is looking dry and a greyish white patch was noticed in sclera of both eyes, were diagnosed as bitot's spots. On enquiring the class teacher, it was found out that child is ward of migratory labourers from Jharkhand and his immunization status is not known and record was not available in the school. Keeping in view Vitamin A deficiency child was given oral vitamin A preparation 2 lac IU stat and was advised ophthalmological consultation.

Photograph 1: depicting left eye of child with greyish white triangular lesion on sclera (Bitot's spot)

[2] A 6 years old female child was seen in school health camp in a primary school. child had stunted growth. According to teacher child has history of frequent absence from school due to ill health. She is susceptible to common respiratory infections. Child also have poor attention span and low understandability to what is taught in class. Sign of vitamin A deficiency bitot's spot was also noticed in this child along with dry scaly skin of hands and cheek and brittle hair and nails. Child was given stat dose of vitamin A 2 lac IU and was referred to higher centre for further evaluation by paediatrician, eye specialist and dermatologist.

Photograph 2: depicting Bitot's spot and dry skin Child with vitamin A deficiency

3. Discussion

Many children who are vitamin A deficient will **not** have the eye signs, known as xerophthalmia (dry eye). This means that children with the eye signs are only the 'tip of the iceberg' there will be many other children in the community who are vitamin A deficient but who have completely normal eyes and vision [3].According WHO the signs of Vitamin A Deficiency are graded as:

- Night blindness (XN)
- Conjunctival xerosis (X1A)
- Bitot's spots (X1B)
- Corneal xerosis (X2)
- Corneal ulcer covering less than 1/3 of the cornea (X3A)
- Corneal ulcer covering at least 1/3 of the cornea, defined as keratomalacia (X3B)
- Corneal scarring (XS)

In children sign's may not be present as in sequence given above, that means children may not have night blindness or xerosis may directly present as bitot's spot or corneal ulceration. Illness may sometimes worsen with other acute illness like diarrhoea or some acute infection. Children with eye signs of vitamin A deficiency are at a high risk of dying. A study conducted in Indonesia is suggestive of that children with night blindness have almost 3 times more risk of dying in childhood. The risk increases to 9 times when bitot's spots are present along with night blindness [4].

Treatment for subclinical VAD includes the consumption of vitamin A–rich foods, such as liver, meat, chicken, eggs, fortified milk, carrots, mangoes, sweet potatoes, and leafy green vegetables.

For VAD syndromes, treatment includes daily oral supplements, as follows:

- Children aged 3 years or younger - 600 mcg (2000 IU)
- Children aged 4-8 years - 900 mcg (3000 IU)
- Children aged 9-13 years - 1700 mcg (5665 IU)
- Children aged 14-18 years - 2800 mcg (9335 IU)
- All adults - 3000 mcg (10,000 IU)
- Therapeutic doses for severe disease include 60,000 mcg (200,000 IU), which has been shown to reduce child mortality rates by 35-70%.

Parents of the children especially the mothers should be sensitized regarding vitamin A deficiency, about the diet which is vitamin A rich and can be included in child's meals.Working together to improve awareness of theissue, the teachers of infant and primary schools can play animportant role promoting a wide-ranging, informative andexplanatory campaign to achieve safe and healthy nutrition. This can be achieved by giving vitamin A rich and fortified food in mid- day meal being provided in schools. Regular health check-ups and screening programmes should be carried out to detect vitamin A deficiency among children. Appropriate measure should be taken to prevent vitamin A deficiency among children to reduce morbidity and mortality related to this illness.

4. Conclusion

Children are future of the nation. To up bring health children means upbringing of a healthy nation. Vitamin A prophylaxis doses have been included in universal immunization programme. But still more efforts are needed to eradicate this preventable kind of illness in children.

References

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