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Post-Measles Keratopathy – a recurring problem in Nigerian Children

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Summary

Onabolu OO. Post-measles Keratopathy – a recurring problem in Nigerian children. *Nigerian Journal of Paediatrics* **1999; 26: 41.** Three cases of post-measles keratopathy are presented to demonstrate the interactions of malnutrition, young age of contracting measles infection, vitamin A deficiency and traditional eye medication in influencing its occurrence and outcome. In the three cases reported, the only child with a good outcome was the one who had been immunized against measles and did not receive traditional eye medication. It is suggested that campaign for measles immunization should be intensified.

Introduction

MEASLES is the commonest cause of childhood blindness in Nigeria.[1-3] Some workers have attributed the pathogenesis of blindness in mesles to vitamin A deficiency.[1-3] However, although xerophthalmia is a major cause of childhood blindness in developing countries, the response of the administration of Vitamin A in post measles keratopathy is variable. Furthermore, paradoxically high levels of vitamin A may be found in patients with measles keratopathy.[4] It is now known that there is considerable interaction between severe measles infection, vitamin A deficiency, herpetic keratitis and sometimes, traditional eye medication.[5] Reducing childhood blindness in developing countries would involve preventing severe measles infection and malnutrition. This paper reports the interaction of several factors leading to varying degrees of visual impairment in three children following measles.

Case Reports

Case 1

A three-year old female child (OS) presented with one-week history of right conjunctival discharge. This followed an attack of measles two weeks prior to presentation. The illness was associated with cough and a facial ulcer which the mother attributed to frequent scratching of the face. The child had completed her immunization schedules against the major childhood infections, including measles. The father was a farmer with two wives and ten children. The patient's mother, who is the husband's second wife, was a petty trader with five children, the patient being the fourth. The mother and her five children slept in the same room. On examination, the child weighed 12kg; she was pale and photophobic. There was a right central perforated corneal ulcer with uveal prolapse. She had a butterfly shaped ulceration of the face and signs of bronchopneumonia. Packed cell volume was 25 percent. After admission, she received Vitamin A tablets 200,000 units on two consecutive days. The eye was treated with topical and subconjunctival gentamicin, atropine eye drops and padded daily for one week, while the bronchopneumonia was treated with intramuscular gentamicin. The ulcer healed within two weeks leaving a dense central scar with iris prolapse. The vision in the right eye after treatment, was 6/24, using picture chart.

Case 2

A two-year old child (OO) was referred for possible optical iridectomy following bilateral post-measles keratopathy. The child was the last born of four children of the mother, none of whom had been

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immunized. She contracted measles from her older brother one month before presentation. Traditional eye medication had been applied at home. Both siblings were admitted into a hospital but the patient was discharged against medical advice following the death of her brother. On examination, the child weighed 10kg, she had a right total anterior staphyloma and a left dense central corneal scar; there was a rim of cornea around the left eye. There was no perception of light in the right eye. She was given Vitamin A tablets 200,000 units, on two consecutive days. Three days later, a left optical iridectomy was carried out and this gave her good navigational vision.

Case 3

A one-year old boy (AS) presented with a two-week history of inability to open both eyes following an attack of measles three weeks prior to presentation. He contracted measles from a neighbour's son living in the same house. The illness was associated with anorexia, diarrhoea and mild cough. The eyes were then treated with traditional herbal medicine. The patient was the only child of both parents. The father worked in Lagos (50km away) as a store keeper while the mother was a housewife. The child was not immunized against any childhood disease. On examination, the child was marasmic, weighing 7kg. He was pale with a haematocrit of 19 percent and had hypopigmented skin patches of the body. He also had bilateral central corneal ulcers measuring 6-7cm in diameter. The cornea were perforated with uveal prolapse in each eye.

After admission, he received whole blood transfusion, systemic antibiotics and Vitamin A 100,000 units, on two consecutive days. Topical and sub-conjunctival gentamicin were given to treat the corneal ulceration. A week later, bilateral conjunctival flap operations were done under general anaesthesia. This involved

raising a fold of conjunctiva inferiorly and pulling it up to cover the cornea after excising the tenons capsule. Both eyes healed very well leaving dense central corneal scars. The left eye was scheduled for optical iridectomy in lieu of corneal graft but the paternal grandmother refused the operation. The child was however, left with fair navigational vision.

Discussion

Post-measles keratopathy is a major cause of childhood blindness in Nigeria.[2] The extent of corneal ulceration in measles is directly related to the severity of the infection. An important risk factor in the severity of measles is the age at which the child contracts the disease. Morley, working in southern Nigeria, had attributed the severity of the illness to the younger age at which the infection was contracted.[7] He compared the situation to that in Britain where only 50 percent of the children contracted measles by age four and half years, whereas in Nigeria, by the age of one year and eight months, 50 percent had had measles and by two years and eight months, 75 percent would have had measles. Miller in 1964, attributed the decline in the complications of measles to the older age at which children were then affected when compared to 1905.[8] The three cases in the present series were aged three years and below with the one-year old child having the severest eye complications.

The immune status of the child is a crucial factor in the contraction and severity of measles infection. Butler in 1913, predicted that measles would be controlled when an effective vaccine was discovered.[9] This was confirmed by Miller[8] who reported that vaccination had decreased the morbidity and mortality due to measles in Britain. A low immunity often found in children of low socio-economic groups also predisposes to secondary bacterial and viral invasion of measles ulcers.[10] Noting the early age at which Africans contracted measles, workers in Kenya suggested that children should be vaccinated by age seven and half months since maternal antibodies would have declined by eight months.[11] In Nigeria, the vaccine is given between the ages of six months and one year. However, the target population for immunization may not be covered due to several logistic reasons. Children from poor families who are more susceptible to childhood infections may not be immunized because their parents may not believe in immunization. Furthermore the difficulty in maintaining the cold chain in vaccine storage may predispose to failure of

Immunization in children that have been vaccinated. Yet, the advantages of immunization are well established. For example, the only child that was immunized in the present series, had the least severe ocular complications and the eyes healed rapidly after treatment; conversely, the other two who were not immunized had severe visual impairment.

The role of Vitamin A in childhood measles infections has been studied in many developing countries.[2 6 10] A recent survey by Ajaiyeoba *et al* revealed a one percent prevalence of night blindness which is an indication of vitamin A deficiency in south-western Nigeria.[11] A high plasma level of vitamin A does not necessarily correspond to a high tissue level as a protein is required to transport the vitamin to target sites. Dossetor and Whittle have reported that there was a protein losing enteropathy in children with measles, and this might account for low tissue utilization of the vitamin.[6]

It has been observed that children from low socio-economic groups weighed less and suffered more frequently from severe measles than their counterparts from high socio-economic classes.[12] In this connection, it is interesting to note that the three cases in the present series came from low socio-economic classes, indicating the negative effects of poverty in measles infection.

Traditional eye medication is common in rural and urban underserved areas of the society. This is largely due to the lack of medical facilities in such areas aided by traditional beliefs concerning measles infection. Some of such traditional medicines contain acidic substances harmful to the eye.[13] The establishment of Primary Health Centres with medical personnel or traditional healers who have received some training in eye medications should reduce the uncontrolled application of medications to the eye.

The present study has indicated that the prognosis of blindness in post-measles keratopathy is worse in the very young, in non-immunized children and in children that have had traditional eye medications. Malnutrition also plays a significant role in this complication of measles. An improvement in the standard of living coupled with immunization should prove useful in preventing this unfortunate cause of blindness.

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