CASE REPORT
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A Tragic Case of Atopic Eczema: Malnutrition and Infections despite Multivitamins and Supplements

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ABSTRACT

Eczema is a common childhood atopic condition and treatment is with emollients, topical corticosteroids and avoidance of possible triggers. *S. aurues* colonization is a common complication. During exacerbation, intensification of treatment is needed to relieve the child from the miserable symptoms of pruritus and sleep disturbance. Systemic antibiotics against *S. aureus* may be required.

We report an infant with eczema who presented with a generalised rash, cardiac arrest and septic shock. Kwashiorkor-like protein energy malnutrition was noted presumably due to deviated dietary practice.

Childhood eczema is an eminently treatable atopic disease. Extreme alternative therapy seems not to be efficacious and may even be associated with grave sequelae.

Keywords: Atopic Eczema; Infection; Malnutrtion; Multivitamins; Supplements

CASE REPORT

A boy developed eczema with dry itchy skin at an early age. His perinatal course was unremarkable. The boy had not seen any doctor after his first dose of DTaP-IPV vaccination because the mother did not believe in "western medicine". Instead, he was given expensive multiple vitamins, "enzymes" and health supplements from 6 months onwards to boost the immune status. The mother claimed that the child received his usual meals which included organic milk and cereals, and tended to "adjust" the dosages of the vitamins and supplements according to the baby's condition. The boy apparently achieved normal milestones initially, babbling, sitting and standing at 8 months. However, regression of these developmental milestones was noted after 8 months. His 9 and 2 year-old sisters were apparently well.

One afternoon at age 12 months, the maid noted that the child became pale and less playful. He was afebrile. His eczema had flared up recently. She phoned up the mother who asked her to give additional doses of vitamins and supplements to the child (Figure 1). The child suddenly became pale, unresponsive and cold 3 hours later and was taken to the emergency department where he was in cardiopulmonary arrest with fixed and dilated pupils and unrecordable blood pressure. Widespread eczematous lesions involving his face, neck, abdomen, groin and limb flexures with areas of oozing, desquamation, and erythema were noted (Figure 2).
Cardiopulmonary resuscitation (CPR) was immediately commenced and the child was intubated. Intravenous access was difficult and an intraosseous line was established. Initial blood gas was pH 6.58, pCO_2 2.4 KPa, and base excess -37 mmol/L. Five doses of adrenaline (each, 1 ml of 1:10000) and 10 ml of 8.4% NaHCO3 via the intraosseous access were administered. CPR was continued for 32 minutes and heart rate picked up to 127/min, BP 111/61mmHg. He was then transferred to the pediatric intensive care unit

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(PICU) for management as septic shock. At PICU, he remained pale, with asymmetrical pupil sizes (right 3mm, left 2mm, responding sluggishly to light). His optic discs were clear and no apparent fractures or bruises to suggest non-accidental injury were noted. He was ventilated and received intravenous broad-spectrum antibiotics and multiple inotropic infusions. During resuscitation, the mother insistently urged the physicians to give additional vitamins and supplements. However, he went on to develop refractory septic shock and multi-organ system failure. He had two further episodes of cardiac arrest at the PICU and succumbed 12 hours later.

Subsequently, blood culture (obtained from intraosseous route) yielded group B streptococcus agalactiae (GBS) sensitive to penicillin. Surface swab of eczematous lesions yielded heavy growth of *S. aureus,* and tracheal aspirate yielded moderate growth of *S. aureus*. Evidence of atopy included elevated IgE to 1611 kIU/l (normal: 5-46 kIU/l). Blood and urinary metabolic and toxicology screening were negative. Among others, the most remarkable findings included an extreme anemia of 6.7 g/dl, hypoalbuminaemia of 8 g/l (normal: 36-48 g/l), hypoproteinaemia of 21 g/l (normal 66-81 g/l) and blood carotenoids <0.1umol/L (normal: 0.74-2.42), which were consistent with extreme malnutrition.

The "health conscious" mother related that she had consistently used dietary supplements but denied excessive food avoidance for his eczema. The boy was given 8 ml of Isotonix and 60 ml of herbal tea blend twice daily; Ultimate aloe 20 ml, Kindervital 4 ml, Probiotic 6 spoonfuls, 8 enzyme pills, DHA oil 4.5 spoonfuls, each 4 times a day; and 4 ml of calcium+magnesium+zinc supplement once daily (Figure 1). The elder sisters were up-to-date with immunizations. They and the mother also took alternative supplements and medications for health and immunity. The mother had declined offers for further assessment of the other children.

DISCUSSION

Eczema is a common childhood atopic/allergic condition and treatment is with emollients, topical corticosteroids and avoidance of possible trigger.[1] *S. aurues* colonization/infection commonly occurs and is treated with topical/anti-staphylococcal treatment. During exacerbation, intensification of treatment is needed to relieve the child from the miserable symptoms of pruritus and sleep disturbance. Systemic antibiotics against *S. aureus* may be required. There is always a concern of methicillin resistant *S. aureus* (MRSA) infection but MRSA is rare in childhood eczema in our locality.[2,3]

The differential diagnoses of an extensive rash in this child with elevated IgE include severe eczema with secondary *S. aureus* infection, toxic shock and scalded skin syndrome.[1] Heavy growth of *S. aureus* was yielded from skin lesions and the patient was in shock. Unfortunately, specific toxins (such as exotoxins A, B, toxic shock syndrome toxin-1, streptococcal pyrogenic exotoxins) were not routinely isolated in most laboratories. Regardless of exact or overlapping nomenclature, the critically ill infant demands prompt antibiotics and intensive care. Moderate *S. aureus* without inflammation (no neutrophils) was also present in the tracheal aspirate. This might represent aspiration instead of *S aureus* pneumonia.

Apart from *S aureus*, a child with eczema is also susceptible to other infections.[1] Routine immunization is an important aspect of ambulatory pediatrics, albeit largely omitted in this unfortunate infant. Infection by Group B Streptococcus is a very serious and eminently treatable condition in newborn and infants.[4] Source of infection is probably from the mother's birth canal. It is a less common infection beyond the immediate perinatal and neonatal period.[5]

Steroid phobia, dietary avoidance and supplementation are among the most frequent alternative therapies among parents of children with eczema.[6-8] There is no evidence to date that multi- or mega vitamins or supplements would prevent or abolish eczema exacerbation despite their popularity. There are a number of randomized, double-blind, placebo-controlled trials on the use of multivitamins and probiotics in the treatment of eczema and they have yielded mixed results.[1] Systematic reviews have failed to document evidence for recommendations of these treatments to be made.[9]

Despite expensive megavitamin, enzymes and supplements, the low blood carotenoids (vitamin A), albumin and protein levels suggest that the infant was chronically malnourished as in Kwashiokor disease, an exceedingly uncommon entity in developed nations nowadays.[10-12] This case illustrates that kwashiorkor-like protein energy malnutrition can occur in childhood eczema, presumably due to deviated dietary practice.

Figure 1. Bottles of multivitamins, enzymes and health supplements from the mother, which include "Infant's probiotic" (*Lactobacillus casei 35%, Streptococcus thermophilus 20%, Bifidobacterium infanti: 15%, Lactobacillus acidophilus 15%, Bifidobacterium bifidum 5%, Bifidobacterium breve 5% Lactobacillus bulgaricus 5%*), Ultimatealoe, Enzyme blend (plant enzymes), Floradix kindervital, Isotonix powerful antioxidant, Floradix saludynam, Isotonix patent antioxidant, and Flora essence (herbal tea blend).

Figure 2. Erythema, excoriations and oozing on the face, limbs and perineum of the moribund infant with secondary *S. aureus* infection and group B streptococcal septicaemia. Estimate weight at resuscitation was 10 kg, other growth parameters not recorded.

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Parental beliefs might be inadvertent and even deadly. Childhood eczema is an eminently treatable atopic disease. This is the first case in this locality to demonstrate that extreme alternative therapy in childhood eczema seems not efficacious and may even be associated with deadly sequelae.

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