

## Commentary

### Health & nutritional status of HIV infected children

Nutrition plays an important role in infections. Malnutrition may predispose to infections, result in severe illness and may affect recovery from infection. Malnutrition is a common complication of HIV infection and AIDS. The interaction between malnutrition and HIV infection is complicated but it may place additional stress on an already weakened immune system and may complicate the treatment of the disease by affecting the ability of the intestinal tract to absorb drugs as also the ability to absorb various nutrients.

Malnutrition in children is particularly devastating because children are in the process of growth and development. Malnutrition places even higher energy demands on their bodies and immune system. It has been estimated that over 90 per cent of children with HIV infection/AIDS will experience delayed growth; major contributors are poor socio-economic status, poor nutritional intake, malabsorption and the disease itself. In severely malnourished children with HIV infection, low CD4+ levels are associated mainly with HIV infection<sup>1</sup>. The availability of anti-retroviral therapy (ART) has improved the survival of HIV-infected children and converted a rapidly fatal disease to a chronic disease. In such a scenario, there is going to be an increasing challenge of managing various aspects of chronic care in children; nutrition is one of the most important ones.

Several studies in HIV infected children from different parts of the world have shown varying degree of malnutrition predominantly wasting and stunting with anaemia. It may be related to stage of illness in population under study, availability of food, associated co-morbidities and medications received specifically zidovudine<sup>2-6</sup>. Loss of body mass is associated with increased mortality<sup>7-9</sup>.

Additional factors have to be taken into account while considering wasting. It is critical to distinguish

between classical wasting and HIV-associated lipodystrophy. Classical wasting is more likely to occur in the context of virological or immunological failure, secondary infection or clinically significant diarrhoea or anorexia<sup>10</sup>. In contrast, in patients with loss of subcutaneous fat in the appendages, buttocks or face in the presence of fat in the central region, malnutrition *per se* is unlikely to be the primary factor.

In this issue Swetha *et al*<sup>11</sup> present their data on nutritional status and morbidity in children infected with HIV in two orphanages in south India. They included 77 children aged between 1.6-15.5 yr both those on ART and those not on ART. They observed that almost half of children were underweight and stunted, micronutrient deficiencies were widely prevalent, and morbidity was more in children not on ART. Authors conclude that acute, chronic malnutrition and micronutrient deficiencies are very common, especially in children not on ART and having morbidity.

Data on nutritional status in children with HIV infection in India are available in a few studies<sup>12-14</sup>. The results of the study by Swetha *et al*<sup>11</sup> are similar to the previously published studies. The data generated from the study may help policymakers to decide about interventions in these patients in India. However, data generated in this study are associated with limitations which may be considered while planning further studies or making some policy for intervention. First, the study was carried out in children staying in two out of five orphanages and they were being regularly monitored for illnesses by physicians even before enrolled in the study. Therefore, the data may be useful only for similar setting. Secondly, the study population was heterogeneous, distributed in wide age group, varying severity of illness, some were receiving ART while others were getting only supportive care. Subgroup analysis is unlikely to give meaningful results because

of small sample size. The dietary intake data were available for only 66 children of the 77 enrolled.

The aim of such studies should be to document magnitude of problem, identify reasons, to establish cause and effect relationship and suggest interventions that may improve the outcome. It is very difficult to establish causal relationship and suggest corrective measures. For example, fortified sorghum meal in adults with HIV infection in Botswana did not influence serum retinol, CD4 cell count and HIV viral load<sup>15</sup>.

It is important to understand that ART improves nutritional and immunological outcome of children with HIV infection. A couple of studies have documented better outcome of malnourished children treated with nutritional supplements along with ART<sup>12,16</sup>. Food supplementation at ART centers has also been demonstrated to improve the adherence to clinic visits and antiretroviral therapy<sup>17</sup>. However, a study in south India reported that macronutrient supplementation did not result in significantly increased weight gain compared with standard care (including nutritional counselling) among ART naïve adults with moderately advanced HIV disease<sup>18</sup>. There is inadequate evidence to support any particular nutritional intervention strategy to improve the outcomes in HIV infected individuals<sup>19</sup>.

A multipronged strategy will be required to improve the nutritional status of HIV infected children. Given the high prevalence of undernutrition, the first step is to screen children for their nutritional status and treat all the undernourished children, not only the ones with severe acute malnutrition. Micronutrient deficiencies must be identified and treated. Some children who are not undernourished are likely to benefit from counselling regarding food intake and nutrition. As many of the families are impoverished, provision of food supplementation either from the programme or food security programme of the State may be beneficial. Early initiation and regular administration of HAART in whom it is indicated will also be beneficial in improving the nutritional status. As the HIV-infection is now a chronic condition, there is a need for evaluation of nutritional status and growth monitoring on an ongoing basis to identify abnormalities and treat early.

**Rakesh Lodha & S.K. Kabra\***

Department of Pediatrics  
All India Institute of Medical Sciences  
Ansari Nagar, New Delhi 110 029, India

\*For correspondence:  
skkabra@hotmail.com

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