

## Abacavir-based Regimen for HIV-infected Children and Adolescents

We studied 48 children receiving abacavir-based HAART regimen, over a period of one-year for side effects and failure rates. None of the children developed hypersensitivity reaction. The CD4 count significantly improved from the time of enrolment till 12 months of therapy while the failure rate was 14.5%.

**Key words:** *Anti-retroviral drugs, Abacavir; Failure rate; Hypersensitivity reaction.*

Abacavir, a nucleoside reverse transcriptase inhibitor (NRTI), is widely used as a combination therapy for treatment of HIV infection in children and adolescents. It is recommended by the World Health Organization (WHO) and National AIDS Control Organization of India (NACO) [1,2]. But, there have been concerns regarding its efficacy and safety [3,4]. Abacavir has been shown to be associated with hypersensitivity reaction, which may prove fatal if the drug is not discontinued [5]. While abacavir is being widely used in children and adolescents who are receiving antiretroviral therapy in India as a part of NACO guidelines, there is paucity of data regarding its side effects and efficacy under pragmatic conditions.

This observational cohort study was conducted at the antiretroviral treatment (ART) center of a tertiary-care teaching hospital over a period of 12 months (from April 2015 to March 2016). All HIV- infected children (18 mo – 18 y) attending the anti-retroviral treatment (ART) center and receiving abacavir-based highly active antiretroviral therapy (HAART) as per NACO guidelines were included. The study was given ethical clearance from the institutional ethics committee and informed consent was taken from parents/grandparents of all the participants

Anthropometry, WHO clinical staging and immunological staging was done at the time of enrolment along with a detailed history and thorough examination. The children were subsequently followed-up every two months for the next one year. At each visit, the children were evaluated for compliance and any side effects of abacavir. Hypersensitivity reaction due to abacavir was defined as presence of two or more of the following symptoms: fever, skin rash, constitutional symptoms (malaise, fatigue, aches), gastrointestinal symptoms (like

abdominal pain, nausea, vomiting, diarrhea), respiratory complaints (cough, pharyngitis, dyspnea). A complete blood count, liver function test, renal function test and CD4 counts were done at enrolment and were repeated at 6 months, 12 months, and as and when required. Immunological/clinical failure was defined as per standard NACO guidelines [2].

Fifty children (36 boys) were enrolled in the study. One child died during the study (unrelated to abacavir hypersensitivity) and one child was lost to follow-up. Out of 48 children available for analysis, the mean (SD) age at enrolment was 9.8 (3.4) years. Two-thirds (32) children received combination of Abacavir, Lamivudine and Nevirapine, whereas one-thirds (16) received Abacavir in combination with lamivudine and efavirenz. Hypersensitivity was not reported in any participant. Side effects observed included fever (8, 16 %), skin rash (7, 14%), respiratory symptoms (6, 12%), gastrointestinal symptoms (2, 4%), and constitutional symptoms (1, 2%). The mean (SD) CD4 count gradually improved from 648 (463) per mm<sup>3</sup> at enrolment to 790 (381) per mm<sup>3</sup> after one year of therapy ( $P=0.006$ ). Immunological failure was seen in 7 (14.5%) children at the end of the study period (**Table I**).

Cruciani, *et al.* [6] in their systematic review and meta-analysis of randomized controlled trials, compared the virologic efficacy of abacavir/lamivudine with tenofovir/emtricitabine, and found no difference in proportion of subjects with a viral load of <50 copies/mL at 48 weeks and 96 weeks in both the groups. Although there have been concerns regarding side effects of abacavir, especially the hypersensitivity reaction, the incidence has been quite low. Jesson, *et al.* [9] in their systematic review and meta-analysis of adverse events among children and

**TABLE I** CD4 COUNT AND CLINICAL STAGING AT ENROLMENT, AND AFTER ABACAVIR-BASED THERAPY

	At enrol- ment	6 mo	12 mo
*CD4 count (/mm <sup>3</sup> ), mean (SD)	648 (463)	768 (383)	790 (381)
WHO immunological staging, n(%)			
Stage 1	22 (45.8)	31 (64.6)	30 (62.5)
Stage 2	18 (37.5)	15 (37.3)	14 (29.2)
Stage 3	8 (16.6)	2 (4.2)	4 (8.3)

\* $P=0.006$  between enrolment and follow-up.

adolescents receiving regimens that contained abacavir in Africa, found a pooled incidence of hypersensitivity reaction to be 2.2% (95% CI 0.4 to 5.2), discontinuation of abacavir to be 10.9% (95% CI 2.1 to 24.3) and adverse events other than hypersensitivity reaction to be 21.5% (95% CI 2.8 to 48.4). But when they analysed only the randomized controlled trials with comparative data, there was no increase in the risk of hypersensitivity reaction [pooled RR 1.08; 95% CI 0.19 to 6.15].

In India, Chakravarty, *et al.* [8] reported hypersensitivity in 7.9% children receiving abacavir-based therapy. Out of 8 children who developed hypersensitivity to Abacavir, 2 carried the HLA-B\*5701 allele.

We conclude that Abacavir-based regimen appears to be effective in HIV- infected children and adolescents, with no major side effects.

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## Relationship of Leisure Time Activities and Psychological Distress in School Children

This questionnaire study on 400 school children found that severe psychological distress using the K 10 scale was seen in 38 (9.5%), and 162 (40.5%) had less than 2 hours of leisure time daily. The prevalence of severe distress was lower in children who had daily time with parents and daily leisure time.

**Keywords:** *Adolescents, Depression, Physical activity.*

**L**eisure time appears to be decreasing with increased academic pressures on urban children, especially after Class 8. In this study, we aimed to assess the current levels of leisure time available to school children, and its relation to levels of psychological distress.

This was an observational, questionnaire-based study conducted in an urban English-medium school in Indore between November 2017 and April 2018. Inclusion criteria were children studying in class 8-10. Children with known chronic illnesses were excluded. The study protocol was cleared by the Institutional ethics committee. Permission was obtained from the principal of the school for conducting the study. Parental consent and students' assent was also obtained.

The children were instructed on how to fill the questionnaire, meaning of questions were clarified, and they were given 20 minutes to complete the questionnaire. Details of the student (age, sex, class, family and occupation of parents), coaching, frequency and duration of free time, type of leisure activities, amount of free time with either parent and questions of the Kessler Psychological Distress Scale (K10) [1,2] were recorded in English. Scores of 20-24, 25-29 and  $\geq 30$  were considered