

## Human Metapneumovirus Infection among Outpatient Children in Dibrugarh

We describe the prevalence of human metapneumovirus infection in children visiting outpatient department with symptoms of respiratory illness in rural areas of Dibrugarh District of Assam. Human metapneumovirus was observed in 7.2% (20/276) of children aged  $\leq 5$  years with detection of genotypes A2b and B2.

**Keywords:** *Epidemiology, Etiology, Pneumonia, Viruses*

Human metapneumovirus (HMPV) – identified in the year 2001 in Netherlands [1] – is considered one of the important agents causing acute respiratory infection (ARI), especially in infants and young children [2]. However, limited information about HMPV is available in India. The aim of the present report was to provide the preliminary information on HMPV in a North-Eastern region of India.

Clinical specimens of nasopharyngeal/nasal and throat swabs were collected during 2009-12 with prior informed consent from outpatient attendees with clinical features suggestive of respiratory illness at three primary health centers (PHCs) in rural areas of Dibrugarh District of Assam. The samples were transported in viral transport media (Himedia, Mumbai, India) to the laboratory in vaccine carrier box maintaining cold chain. In the laboratory, viral RNA was extracted from 140 $\mu$ L of clinical specimens using commercially available Qiamp Viral RNA mini kit (Qiagen, Hilden Germany) followed by detection using one step RT-PCR kit (Qiagen, Hilden Germany), utilizing primers and methodology as described by Huck [3]. For confirmation and genetic analysis, a few viral isolates were subjected to partial nucleotide sequencing targeting F and N gene of HMPV. The study was approved by the Human Ethics Committee of Regional Medical Research Center, Dibrugarh.

A total of 1548 patients with Influenza-like illness (ILI) were recruited from three PHCs. Out of which, 493 were children aged 5 years or less. More than 50% of such patients (276/493) were included in the present study where HMPV was detected in about 7.2% (20/276). There were equal numbers of males and females (10 each) with mean (SD) age 2.2 (1.5) years. The most common clinical presentations were fever (100%), nasal discharge (100%),

cough (90%) and concomitant history of ILI in the family (50%). Highest prevalence of HMPV was detected in the month of January (46.7%) followed by December (16.7%). Genotyping data available for 3 out of 20 cases (15%) revealed the presence of both A (Subtype A2b) and B (Subtype B2) genotypes (KJ635573-75). The results were in congruence with N gene sequences (KJ635576-77). Genotype-specific amino acids as reported by Yang, *et al.* [4] were also observed in the sequences obtained in the present study.

In India, HMPV as a cause of ARI is underestimated due to limited data. Existing studies from India show variable prevalence of HMPV ranging from 1%-19% in different settings [5-10]. The prevalence of HMPV in Dibrugarh district of Assam was higher than reported earlier from Eastern India [8]. However, it was lower than reports from Pune and Delhi [5,6]. The circulation of both the detected genotypes of HMPV has previously been reported in India.

Community-based studies regarding the contribution of circulating viruses are scarce in India, where a substantial number of children die each year due to ARI. Evaluating the role of individual etiological agents is of prime importance for the development of effective therapy, and vaccine regimen.

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*Contributors:* DB, BB and JM conceptualized the study, KY performed RT-PCR, sequence analysis and drafted the manuscript; BB and JM were involved in the critical review of the manuscript.

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**DIPANKAR BISWAS, KAUSHAL YADAV, \*BISWAJYOTI BORKAKOTY AND JAGADISH MAHANTA**

*Division of Virology,  
Regional Medical Research Centre,  
Northeast Region, Post: Lahoal,  
Dibrugarh, Assam, India.*

*\*biswaborkakoty@rediffmail.com*

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## Plasma Vitamin C Status of Adolescent Girls in a Slum of Delhi

A cross-sectional study was conducted among 775 adolescent girls (11-18 years) residing in a slum of Delhi to assess plasma vitamin C levels. The mean (SD) plasma levels of vitamin C were 0.76 (0.45) mg/dL. Overall, 6.3% and 27.6% girls had deficient (<0.2 mg/dL) and suboptimal levels (0.2-0.49 mg/dL) of plasma vitamin C, respectively.

**Keywords:** Nutrition, Scurvy, Survey.

Vitamin C plays a major role in synthesis of collagen, carnitine and norepinephrine besides its antioxidant activities, and role in erythropoiesis [1]. Limited information is available on the vitamin C nutriture among adolescent girls belonging to low socioeconomic status.

The study was carried out in Kirti Nagar slums of West Delhi. Door-to-door survey to identify adolescent girls was carried out in 6 out of the 10 major blocks of these slums. Apparently healthy, unmarried non-pregnant adolescent girls were enrolled for the study.

Data on prevalence of plasma vitamin C deficiency presented in this paper is a part of data from a large study which was carried out to assess the effectiveness of iron and folic acid supplementation with vitamin B12 on anemic adolescent girls (CTRI/2011/12/002217). Ethics Committee Clearance was obtained from Lady Irwin College, University of Delhi. The study was carried out during January 2012 to March 2013.

A total of 1228 adolescent girls were identified, out of which 794 volunteered for the study. Based on inclusion criteria, 775 adolescent girls were recruited. Venous blood was drawn by trained personnel and collected in ethylene diaminetetraacetate (EDTA) vials. The vials were then centrifuged at 1500 rpm for 10 minutes and plasma was separated in pre-labelled eppendorf vials. The vials were transported from the field to the laboratory in thermocol box containing dry ice and were stored at  $-80^{\circ}\text{C}$  until analysis. Estimation of plasma vitamin C was undertaken in NABL accredited laboratory at our center. Plasma vitamin C was analyzed spectrophotometrically as per standard method [2]. Plasma vitamin C levels were categorized as deficient (0.2 mg/dL), suboptimal (0.2-0.49 mg/dL) or adequate ( $\geq 0.5$  mg/dL) [3].

Dietary intake of vitamin C was assessed using 24-hour recall method on a subsample ( $n=320$ ). The data were analyzed for the mean consumption level using 'Dietsoft' software based on Nutritive Value of Indian Foods [4]. The value thus obtained was assessed for adequacy by comparing with respective recommended dietary intake (RDA) [5].

The mean (SD) level of vitamin C among 775 adolescent girls (mean age 13.3 years) was 0.76 (0.45) mg/dL (95% CI: 0.73-0.79 mg/dL). Overall, 6.3% (95% CI: 4.6%-8.0%) girls had deficient, 27.6% (95% CI: 24.4%-30.8%) had suboptimal and 66.1% had optimum levels of plasma vitamin C. The mean (SD) dietary consumption of vitamin C was 48.3 (25.6) mg/day. When compared with RDA of 40 mg/day, approx. 50% subjects reported more than 100% dietary adequacy, 20% reported 75-100% adequacy and 30% had 50-75% adequacy.