There was no statistically significant difference in age and sex of the two groups. The immune compromised group had headache as a symptom more often than the control group (P=0.01). Statistically significant differences were found in hepatic dysfunction in form of raised transaminases, days to platelet recovery (documented rise in platelet count form baseline by at least 20000/µL and above 50000/µL twice), and higher requirement of fluid in immune-compromised **(*Table* I**). The duration of stay was higher in immune-compromised compared to immune-competent group. Six patients in immune-compromised group with hematological malignancy with severe thrombocytopenia and two immune-competent patients with mucosal bleeding (in presence of severe thrombocytopenia) received platelet transfusion. Colloid was required during fluid resuscitation in only 5 patients (3 in immune compromised and 2 in immune-competent).

Sharma, *et al*. [2] in a series of five patients with hematological disease reported no difference in clinical outcome of patient compared to normal population. Ramzan, *et al*. [3] reported similar observation of lower day 1 platelet in their case series on dengue fever as a cause of febrile neutropenia in children with acute lymphoblastic leukemia [4]. Duration of illness in normal population is reported as 4-7 days [4]. Visuthranukul, *et al*. [5] in a case report of dengue in a stem cell transplant recipient, also observed prolonged duration of illness in immune compromised. Principles of treatment and prevention remain the same as in immune-competent individuals.

This study shows a trend towards greater severity and complications of dengue in immune-compromised children. A similar study on larger population including estimation of viral load and immunological response estimation will help in understanding the complex interplay of dengue infection and immunity.

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Incidentally Detected Elevated Liver Enzymes: From Liver to Muscle

We describe 8 children – with incidentally detected isolated elevation of liver enzymes aspartate aminotansferase and alanine aminotransferase – who were extensively evaluated for hepatic causes before finally being diagnosed to have muscular dystrophy. Serum creatinine phosphokinase levels, if performed early during the work-up, may help in diagnosis of muscle disease and avoid unnecessary investigations for liver disease.

Keywords: *Anicteric hepatitis, Creatinine phosphokinase, Muscular dystrophy.*

Elevated levels of serum aspartate aminotransferase (AST) and serum alanine aminotransferase (ALT) usually indicates hepatocyte injury. However, due to their widespread distribution in the body, serum levels of these enzymes can be elevated in other conditions as well [1,2]. Muscle disorders like muscular dystrophies, inflammatory myopathies and metabolic myopathies can lead to elevated blood levels of creatine phosphokinase (CPK), lactate dehydrogenase (LDH), ALT and AST [1] .

Over a period of 6 years, eight boys with a median (range) age of 4.5 (0.5,13) year were referred to us for evaluation of persistently abnormal liver function test (LFT). Abnormal LFTs were detected incidentally and the

indications for ordering LFT were antituberculous drug therapy (*n*=3), anticonvulsant therapy (*n*=1), evaluation of poor weight gain (*n*=3) and abdominal pain (*n*=1). On detailed evaluation, there was no history or clinical evidence of icterus, organomegaly or other signs to suggest chronic liver disease. The only abnormality in all the serial LFTs was elevated serum transaminases (ALT and AST) in the presence of normal bilirubin, albumin, prothrombin time and other liver enzymes. Mean (range) AST was 320 (134, 550) IU/L and ALT was 342 (154, 560) IU/L. Ultrasonography of abdomen, HbsAg and anti-HCV antibodies were performed in all patients. Five patients had been worked-up for Wilson's disease and autoimmune hepatitis. Serum ammonia and lactate was done in three patients and celiac serology in one patient. Liver biopsy was performed in three children. All these tests were reported normal.

One child (13-year-old) had a waddling gait. The other seven children had a normal gait but a positive early Gower's sign. In two of these children, a positive Gower's sign was seen only on asking the child to get up from the supine position (need to turn on their sides to get up because of weakness of neck flexors - initial component of Gower's). Mean (range) serum CPK levels were 18,250 (7340, 53617) IU/L. Genetic analysis confirmed a diagnosis of Duchenne muscular dystrophy in seven patients, and one had sarcoglycanopathy on muscle biopsy.

Though many conditions such as viral hepatitis, Wilson's disease, autoimmune disease, non-alcoholic steatic hepatitis (NASH) and celiac disease can cause anicteric hepatitis, muscle disease should also be considered early in the differential diagnosis of a child with isolated elevation of AST and ALT. Recognition of muscle disease in children may sometimes be difficult, especially in the pre-symptomatic period [3], and failure to recognize it as a cause of abnormal LFT may lead to unnecessary and invasive investigations like liver biopsy [1,4]. We recommend that serum CPK levels should be performed early in evaluation of children with isolated elevated liver enzymes with no clinical signs/symptoms of liver disease.

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