

within 24 hours of PICU admission was not independently associated with increased mechanical ventilation time, length of stay, or mortality(5), though they used a cut off of 200 mg/dL for defining hyperglycemia. Our study patients differ from those in other studies in that we did not have post-surgical patients, while in others they constituted a major proportion. Moreover, a considerable number of children had associated malnutrition. The findings reported here should serve as a caution to the prevalent view supporting the association of hyperglycemia with poor outcome in the PICU.

**Rakesh Lodha, Tsultem D Bhutia,
SK Kabra ,
and Anu Thukral**

*Department of Pediatrics,
All India Institute of Medical Sciences,
Ansari Nagar, New Delhi, India.
rakesh_lodha@hotmail.com*

REFERENCES

1. Srinivasan V, Spinella PC, Drott HR, Roth CL, Helfaer MA, Nadkarni V. Association of timing, duration, and intensity of hyperglycemia with intensive care unit mortality in critically ill children. *Pediatr Crit Care Med* 2004; 5: 329-336.
2. Faustino EV, Apkon M. Persistent hyperglycemia in critically ill children. *J Pediatr* 2005; 146: 30-34.
3. Wintergerst KA, Buckingham B, Gandred L, Wong BJ, Kach S, Wilson DM. Association of hypoglycemia, hyperglycemia and glucose variability with morbidity and death in pediatric intensive care unit. *Pediatrics* 2006; 118: 173-179.
4. Hirshberg E, Larsen G, Duker VD. Alteration in glucose homeostasis in pediatric intensive care unit. *Pediatr Crit Care Med* 2008; 9: 361-366.
5. Klein GW, Hojak JM, Schmeidler J, Rappaport R. Hyperglycemia and outcome in pediatric intensive care unit. *J Pediatr* 2008; 153: 379-384.

Intravenous Immune Globulin for Severe Acute Myocarditis in Children

We evaluated high-dose (2g/kg) intravenous immunoglobulin (IVIG) for severe acute myocarditis in 13 children and compared them for survival with 12 children with myocarditis treated with only conventional therapy. Baseline characteristics were similar between the two groups. Both groups had poor left ventricular ejection fraction (LVEF) on admission. *The mortality rate was 8% in the IVIG treated children as compared to 46% in controls (P=0.04).* Our study supports the use of IVIG in severe acute myocarditis in children.

Key Words: *Child, Immunoglobulin, Left ventricular ejection fraction, Myocarditis.*

We conducted this study to assess the effectiveness of intravenous immune globulin (IVIG) in children with acute severe myocarditis. For this, we studied case-records of all infants admitted with clinical diagnosis of acute myocarditis in our PICU between 2004 to 2007. The diagnosis of acute myocarditis was established clinically on the basis of the history combined with supporting physical examination, relevant investigation and evidence of decreased left ventricular function on echocardiography(1).

Children with pre-existing structural heart defect, cardiomyopathy, coronary anomaly, sepsis, or Kawasaki's disease were excluded. Endomyocardial biopsy was not done. Patients were divided into two groups: *Group I* – who received aggressive supportive care and high-dose IVIG ($n=13$) (2 g/kg over 16-24 h on day of admission) and *Group II* – who received only supportive care and no IVIG($n=12$). The study was approved by the institutional ethical review committee.

Baseline characteristics of the two groups are compared in **Table I**. All of them have antecedent illness (either gastrointestinal or respiratory; mean 2 days), tachypnea and tachycardia for age, hepatomegaly, gallop murmur, pulmonary edema and severe metabolic acidosis. Cardiac troponin (cTnI) was done in Group I only and was markedly elevated (mean 2ng/mL) (normal value <1). All of them received mechanical ventilation for cardiorespiratory support. No adverse effect was observed

TABLE I PATIENT CHARACTERISTICS OF TWO GROUPS

Variables	IVIG- (controls) <i>n</i> = 13	IVIG+ (cases) <i>n</i> = 12	<i>P</i> value
Age (mo), mean(SD)	12.0 (4.9)	7.3 (5.8)	0.04
Gender (M/F)	6/7	6/6	0.6
Hepatomegaly	12	9	0.3
Cardiomegaly	12	12	0.5
ECG: Low-voltage	12	9	0.3
Initial EF (%), mean(SD)	22.5 (11.1)	17.5 (5.0)	0.17
Inotropes	1.5 (0.9)	3.0 (1.1)	0.001

EF: ejection fraction

from immunoglobulin administration. In Group I, only one patient (8%) expired as compared to 6/13 (46%) in Group II ($P=0.04$). Recovery of left ventricular function was not significantly different between two groups (49% vs. 46%) ($P=0.13$).

Our reports showed that IVIG group had significant higher survival rate (92%) than other group who did not receive IVIG (54%). The therapeutic efficacy of high-dose IVIG in Kawasaki disease has been already established(2). Other experimental animal and human studies in acute myocarditis have also reported better outcome with IVIG(3-6).

Our study had few limitations. The diagnosis was based on clinical features, CXR, ECG, and echocardiography. Small sample size and retrospective nature of the study were the other hinderances. However, this study provides support for aggressive supportive care and early use of IVIG in acute myocarditis in children.

**Anwarul Haque, Samreen Bhatti
and Fahad J Siddiqui**

*Department of Pediatrics and Child Health,
Aga Khan University Hospital,
Stadium Road, P O Box 3500,
Karachi 74800, Pakistan.
anwar.haq@aku.edu*

REFERENCES

1. Levi D, Alejos J. Diagnosis and treatment of pediatric viral myocarditis. *Curr Opin Cardiol* 2001; 4: 171-181.
2. Newburger JW, Takahashi M, Burns JC, Beiser AS, Chung KJ, Duffy CE, *et al.* The treatment of Kawasaki syndrome with intravenous gamma globulin. *N Engl J Med* 1986; 315: 341-347.
3. Drucker NA, Colan SD, Lewis AB, Beiser AS, Wessel DL, Takahashi M, *et al.* Gamma-globulin treatment of acute myocarditis in the pediatric population. *Circulation* 1994; 89: 252-257.
4. Golland S, Czer LS, Seigel RJ, Tabak S, Jordan S, Luthringer D, *et al.* Intravenous immunoglobulin treatment for acute fulminant inflammatory cardiomyopathy: series of six patients and review of literature. *Can J Cardiol* 2008; 24: 571-574.
5. McNamara DM, Rosenblum WD, Janosko KM, Trost MK, Villaneuva FS, Demetris AJ, *et al.* Intravenous immune globulin in the therapy of myocarditis and acute cardiomyopathy. *Circulation* 1997; 95: 2476-2478.
6. Kishimoto C, Shioji K, Kinoshita M, Iwase T, Tamaki S, Fujii M, *et al.* Treatment of acute inflammatory cardiomyopathy with intravenous immunoglobulin ameliorates left ventricular function associated with suppression of inflammatory cytokines and decreased oxidative stress. *Int J Cardiol* 2003; 91:173-178.

Statistical Reporting in *Indian Pediatrics*

We analyzed 45 original articles from *Indian Pediatrics* for appropriateness of the statistical methods. Appropriate statistical tests (93%), no use of obscure test and use of exact *P* value were the positive findings observed. Sample size was calculated in 24% and confidence interval in 13%. There is a need to generate awareness regarding confidence interval and sample size calculations.

Key words: *India, Journal, Statistics.*

Statistical errors are common in scientific literature(1-3). We conducted this study to evaluate the appropriateness of statistical techniques used and types of statistical errors present in original papers