Predictors for Dialysis Requirement among Patients with Haemolytic-Uremic Syndrome Caused by Shiga Toxin-Producing E. Coli

E. Vidal, M. Ranieri, G. Ghirardo, G. Scavia, E. Benetti, G. Longo, M. Parolin, L. Murer*

Nephrology, Dialysis and Transplant Unit, Department of Pediatrics, University-Hospital of Padua, Italy
*Italian Registry of Haemolytic-Uremic Syndrome, Istituto Superiore di Sanità, Rome, Italy

OBJECTIVES

Haemolytic-uremic syndrome caused by Shiga toxin-producing E. Coli (STEC-HUS) is a major cause of acute kidney injury in children and in 30% of cases renal replacement therapy (RRT) is required during the acute phase. Several studies have tried to define clinical features and laboratory markers that might be predictive for dialysis requirement. Major problems regarding studies on both risk factors and long-term outcomes of HUS involve the inclusion of all types of HUS ("typical" and "atypical"), whereas there have been no reports which analysed these factors only in a STEC-HUS cohort of patients.

The **aim** of our study was to detect early clinical and biochemical risk factors for dialysis (RRT) at HUS onset in a homogeneous cohort of "typical" HUS patients.

METHODS

We retrospectively analysed the records of all children with confirmed microbiologically STEC-HUS between January 2007 and Deecember 2012. These patients were divided into two groups (**RRT+** and **RRT-**), depending on whether or not dialysis was required during the acute phase. A case-control study was then performed in order to compare patients exposed/unexposed to the following factors:

- Age at onset <3 years
- E. Coli serotype O157
- CNS involvement
- Antibiotic exposure
- White Blood Cell Count
- LDH, D-dimer, total cholesterol and triglyceride levels
- Number of RBC transfusions

Statistical analysis of comparison between the two groups was performed using univariate non-parametric test and multivariate logistic regression analysis. Where necessary, pooled median values were employed to dichotomize continuous variables.

RESULTS

We analysed data on 35 patients with STEC-HUS, whose median age at onset was 26 months (IQR 7-96). In 16 cases, dialysis was required because of a percentage of fluid overload greater than 10% body weight. Six patients were treated initially with CVVH, 5 patients with PD, while 5 patients received sequentially PD and CVVH. The predictive values for RRT requirement are shown in the Table. The multivariate regression analysis confirmed an independent association between LDH level (OR 12.5 [1.13-138.5]: p=0.03), triglyceride level (OR 28.6 [2.5-322.5]; p=0.006) and RRT requirement. Median oliguric period and time on dialysis resulted comparable between children on PD and those receiving extracorporeal dialysis. The median length of stay in hospital after the diagnosis of HUS in children on CVVH was 21.3 days (IQR 12-28), significantly shorter that that observed in those on PD (26.4 days [IQR 15-45]; p=0.001).

	RRT- (n=19)		RRT+ (n=16)		*p*
Age ≤3 years	9	47%	15	94%	***0.003***
E. Coli O157	9	47%	3	19%	0.07
CNS involvement	0	0%	6	38%	***0.005***
Antibiotic exposure	0	0%	2	12%	0.20
WBCC >13280/ml	8	42%	10	62%	0.22
LDH >4084 UI/L	4	21%	13	81%	***0.001***
D-dimer >1446 ug/L	5	26%	12	75%	***0.003***
Cholesterol >5.48 mmol/L	6	31%	11	69%	***0.03***
Triglycerids >4.68 mmol/L	4	21%	13	81%	***0.001***
RBC transfusion >1	9	47%	13	81%	0.04

CONCLUSIONS

Serum LDH and triglycerids resulted the best early and independent risk factors for dialysis requirement at STEC-HUS onset.

Outcomes in children with STEC-HUS treated with extracorporeal dialysis techniques or acute PD were comparable.

51ERA-EDTA
724--MP
O) Paediatric nephrology.
Enrico Vidal
DOI: 10.3252/pso.eu.51era.2014
Poster presented at: 51 ERA-EDTA CONGRESS AMSTERDAM 2014