

EVALUATION OF LAB TESTS AND CORRELATION WITH HOSPITAL STAY, TRANSFUSION AND ICU CARE IN PAEDIATRIC TRAUMA PATIENTS

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ABSTRACT

Objective The aim of this study was evaluation of lab tests and their correlation with hospital stay, transfusion and ICU care in pediatric trauma patients.

Study design Analytical study.

Place & Duration of study Department of pediatric surgery at Imam Khomeini Hospital, Ahwaz, Iran from 2002 to 2006.

Patients and Methods All pediatric trauma patients, under 15 years of age admitted to the department during the study period were included. Their file record was put on a specially designed proforma noting age, gender, lab tests like complete blood count, serum electrolytes, urea, blood sugar, urine analysis etc. The data collected was analyzed by χ^2 test via SPSS.

Results A total of 86 patients were admitted during the study period. Among these 53 were boys. Abnormal tests were white blood cell / hemoglobin (68.6%, 23%) Na^+ / K^+ / BS (7%, 15.1%, 60.5) and U/A 31.4 %. Most of patients did not require blood transfusion, ICU care and surgery.

Conclusions The results for lab tests in trauma were similar to the results of studies in other countries. Leucocytes and hyperglycemia are important findings. Other laboratory results like anemia, hematuria and change of Na^+ and K^+ levels are of little value in the management of injured children.

Key words Trauma, Lab tests, Pediatric.

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INTRODUCTION:

Trauma is a major world wide public health problem. It is one of the leading causes of death and disability in both industrialized and developing countries. Standard laboratory panels done in trauma patients as they play an important role in the management. Parish et al reported that hyperglycemia in traumatic patients was a transient response and insulin therapy was not recommended.

Hyperglycemia has no prognostic importance in these patients.¹ The aim of this study was to evaluate the results of lab tests and find out their correlation with hospital stay, transfusion and ICU care in trauma patients.

PATIENTS AND METHODS:

This is a retrospective study of pediatric trauma patients under 15 years of age admitted to Imam Khomeini Hospital Ahwaz, Iran from year 2002 to 2006. Data was retrieved and assessed for gender, age, lab test like Na⁺, K⁺, BS and WBC, hemoglobin and U/A. The data collected was analyzed by X² test via SPSS.

RESULTS :

Out of 86 patients there were 53 boys and 33 girls. Abnormal tests included: white blood cell / hemoglobin (68.6%, 23%) Na⁺/K⁺/BS (7%, 15.1%, 60.5%) and U/A 31.4 % (table 1). Most of the patients did not require blood transfusion, ICU care and sugary. Frequency of trauma according to age was 30.2%, 36.2%, 33.7% for children aged <5 years, 5-10 years, and >10 years respectively. The duration of hospital stay based on blood transfusion is given in table-2. There was a significant relationship between anemia due to trauma and number of transfused packed RBC (P<0.05). 16.3% of these patients had indication of surgery. ICU admission was done for the 20.9% of patients. From these patients, 23.3% had anemia due to trauma and 76.6% did not. Length of hospital stay was less than 5 days in 53.5% cases, between 5 – 10 days in 27.9% and more than 10 days in 18.6%.

Table: Laboratory Finding in Trauma Patients

Test	Range	% Frequency	Number
Glucose mg/dl	<110	33.7	29
	110-150	37.2	32
	>150	23.3	20
Leucocytosis (10 ³)	<11	31.4	27
	11-18	40.7	35
	>18	27.9	24
Anemia	Yes	23.3	20
	No	76.7	66
Hematuria	Yes	31.4	27
	No	37.2	32
Na	Hyponatremia	4.7	4
	Normal	83.7	72
	Hypernatremia	2.3	2
K	Hypokalemia	11.6	10
	Normal	75.6	65
	Hyperkalemia	3.5	3

Table-2: Duration of Hospital Stay Based on Blood Transfusion.

Duration of hospital stay	No. of transfusion	1 unit	2-3 units	>3 unit
<5	65%	38.89%	0	0
5-10	26.67%	33.33%	20%	33.33%
>10	8.33%	27.78%	80%	66.67%

DISCUSSION:

The results for lab tests in trauma were similar to the results of studies in other countries. Leucocytes and hyperglycemia are important lab tests to be requested in trauma patients. Other laboratory findings like anemia, hematuria and change of Na⁺ and K⁺ are of little value in the management of injured children. In the study conducted by Ford et al., Na and K level were normal on initial evaluation of the trauma patients.

Haris et al reported that leucocytosis with 84.4% sensitivity and 55.2% specificity could indicate extent of visceral injury after blunt trauma. Another study showed that mortality and morbidity were higher in patients with blood glucose >300 mg/dl.

Capraro et al reported that glucose with sensitivity of 75% was the commonest abnormal finding in trauma patients. According to other studies leucocytosis was one of the common findings in the trauma patients⁵. Martin et al. reported that abnormal results of Na, K, hematocrit, and U/A were seen in 3%,30%,27%, and 21% respectively⁶. According to current study and other published paper, some of the laboratory tests like leucocytosis and hyperglycemia, can help determine the outcome of the patients. Issacman et al. reported that physical examination combined with U/A is highly sensitive for intrabdominal injury and in patients with normal physical examination of abdomen and normal U/A, laboratory testing seldom identifies unsuspected injuries.⁷

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