BLOOD COUNTS IN PATIENTS WITH ACUTE HYPERSENSITIVITY REACTIONS TO DRUGS AND FOOD

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Background and Aims

Adverse drug reactions (ADR) represent a major health problem worldwide with high morbidity and mortality rates. The diagnostic tools available for the practical differentiation of food and drug reactions are very limited and do not allow making a comprehensive picture of the formation of the pathological process in a particular patients.

Method

Hematological parameters and blood biochemical markers were measured in 134 patients (71 boys) aged 4 -17 years with acute hypersensitivity reactions induced by food (65 patients) and medicines (69 patients). Both groups of patients had comparable clinical symptoms with predominance of skin lesions.

Results

The significant differences between the groups with drug- and food-induced hypersensitivity reactions were found in their red blood characteristics. In patients with hypersensitive reactions to drugs, significantly lower levels of erythrocytes and hemoglobin were found, while the median values of these parameters did not exceed the limits of reference values. These differences persisted also in the analysis of hemoglobin values, analyzed with accounting the age and sex of patients. Reduction of hemoglobin was not accompanied by an increase in bilirubin in these patients.

Conclusion

Thus, this fact does not support the assumption about the drug-induced hemolysis as a main effect influencing the hematological parameters in these patients. The biochemical markers were not significantly distinguished except bilirubin and alkaline phosphatase which were higher in patients withfood-induced hypersensitivity. The biochemical markers were not significantly distinguished except bilirubin and alkaline phosphatase which were higher in patients withfood-induced hypersensitivity.

References

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Table
Basic hematological values in children with acute food- and drug-induced hypersensitivity reactions

Parameters	Group of patients		Statistics
	Food hypersensitivity	Drug hypersensitivity	
Number of patients	63	71	
RBC	4.47±0.38	4.21±0.36	t=9.90; p=0.0021
	4.455 [4.37; 4.5]	4.2 [4.1; 5.4.37]	KWT=9.47; p=0.0021
RBC boys	4.53±0.37	4.30±0.41	t=5.92; p=0.0176
	4.46 [4.37; 4.70]	4.28 [4.1; 4.5]	KWT=5.19; p=0.0233
RBC girls	4.38±0.38	4.24±0.31	t=2.71; p=0.1053
	4.39 [4.1; 4.5]	4.2 [4.0; 4.38]	KWT=2.65; p=0.104
RRBC	1.12±0.17	1.05±0.24	t=3.95 ; p=0.0491
	1.13 [1.11; 1.16]	1.08[1.06; 1.11]	KWT=8.47; p=0.0036
HB, g/L	135.64±11.23	127.20±8.98	t=23.30; p=0.0000
	136.0 [131.2; 142.0]	127.0 [124.7; 130.3]	KWT=19.27; p=0.00001
HB boys	137.78±11.21	126.15±10.39	t=20.11; p=0.0000
	139.0 [131.1; 143.9]	126.0 [120.0; 132.3]	KWT=15.37; p=0.00009
HB girls	132.6±10.73	128.1±7.6	t=3.83; p=0.05503
	134.5 [125.9; 142.0]	129.0 [124.4; 131.6]	KWT=3.91; p=0.048
RHB	1.062±0.084	1.002±0.072	t=19.95; p=0.0000
	1.07 [1.03; 1.11]	1.01 [0.98; 1.03]	KWT=16.88; p=0.00004
HCT	39.4±2.78	37.60±2.90	t=11.87; p=0.008
	39.85 [38.5; 41.1]	37.95[36.0; 39.0]	KWT=11.26; p=0.00008
HCT boys	39.54±2.52	37.07±3.24	t=11.38; p=0.0013
	39.4 [38.2; 41.3]	36.9 [35.1; 39.6]	KWT=9.29; p=0.002
HCT girls	39.20±3.17	38.06±2.51	t=2.25; p=0.1397
	40.3 [37.96; 41.67]	38.0 [36.37; 39.83]	KWT=3.09; p=0.079
MCV	81.38±3.59	80.95±5.10	t=0.28; p=0.5984
	80.9 [79.9; 82.0]	80.751 [78.8; 81.8]	KWT=0.539; p=0.463
RMCV	0.985±0.041	0.988±0.051	t=0.07; p=0.7878
	0.99 [0.98;1.0]	0.985 [0.96; 1.01]	KWT=0.014; p=0.907
MCH 26-34	27.9±1.66	27.78±2.33	t=0.07; p=0.7927
	27.7 [27.3; 28.2]	27.6 [26.8; 28.2]	KWT=04104; p=0.525
RMCH	0.981±0.054	0.979±0.075	t=0.04; p=0.8484
	0.98 [0.96; 0.99]	0.97 [0.96; 0.99]	KWT=0.414; p=0.52
MCHC 280-370	342.72±15.82	343.5±22.22	t=0.05; p=0.8270
	345.0 [339.0; 350.0]	339.0[335.0; 342.2]	KWT=2.56; p=0.11
RMCHC	0.995±0.046	0.998±0.064	t=0.11; p=0.7364
	1.0 [0.98; 1.01]	0.99 [0.97; 0.99]	KWT=1.846; p=0.174
PLT	293.067±79.2	300.59±69.3	t=0.32; p=0.5705
	290.0 [258.5; 316.2]	301.0[277; 318.5]	KWT=0.5622; p=0.4531
RDW-sd	38.45±2.878	39.36±4.25	t=1.81; p=0.1805
	38.0[37.2; 39.1]	38.4 [37.7; 39.6]	KWT=1.167; p=0.28
RDV-cv	13.35±0.996	13.54±0.93	t=1.19; p=0.2775
	13.1[12.9; 13.4]	13.4 [13.2; 13.77]	KWT=2.75; p=0.1001
PDW	12.72±2.38	11.80±2.00	t=5.26; p=0.0236
	12.6 [11.8; 13.0]	11.4 [10.6; 12.2]	KWT=5.28; p=0.022
MPV	10.70±1.078	10.22±1.29	t=4.83; p=0.0299
	10.8 [10.2; 11.0]	10.25 [9.6; 10.5]	KWT=4.95; p=0.026
p-lcr	30.43 ± 8.28	27.34 ± 8.87	t= 3.71; p= 0.0566
	30.9 [26.6; 33.0]	26.8 [22.1; 29.08]	KWT = 4.1883; p= 0.0407
PCT	0.317 ± 0.0832	0.318 ± 0.084	t= 0.00; p= 0.9463
	0.31 [0.28; 0.34]	0.31 [0.28; 0.33]	KWT = 0.000; p= 0.996
WBC	10.52 ± 3.80	11.17± 3.94	t= 0.92; p= 0.3394
	10.51 [8.96; 11.38]	10.5 [9.43; 11.99]	KWT = 0.509; p= 0.476
NEUT, %	77.63 ± 12.40	73.8 ± 15.492	t= 2.1; p=0.1498
	79.95 [77.58; 82.94]	78.2 [72.0;82.0]	KWT = 1.43; p=0.232
LYM, %	18.28 ± 10.70	21.28 ± 12.72	t= 1.85; p=0.1768
	15.58 [14.08; 19.1]	18.2 [15.28; 22.82]	KWT = 1.908; p=0.167
MONO, %	3.69 ± 2.42	4.31 ± 3.58	t= 1.15; p= 0.2857
	3.0 [2.6; 4.17]	3.1 [2.2; 4.04]	KWT = 0.186; p= 0667
EO, %	0.34 ± 0.73	0.627 ± 1.637	t= 1.34; p= 0.2499
	0.1 [0.1; 0.1]	0.1 [0.1; 0.2]	KWT = 0.60 1; p=0.438
ESR	9.33 ± 6.35	10.06 ±5.65	t= 0.48; p= 0.4892

Abbreviations: WBC – White Blood Cell Count; RBC – Red Blood Cell Count; HGB – Level of hemoglobin molecules; HCT – Hematocrit; MCV – Mean corpuscular volume Red Blood Cell; MCH – Mean corpuscular hemoglobin; MCHC – Mean corpuscular hemoglobin concentration; PLT – Platelets levels in the blood; NEUT% – Neutrophil granulocyte, %; MONO% – Monocyte, %; EO% – Eosinophil granulocyte, %; BASO% – Basophil granulocyte, %; RDW-SD – red cell distribution width, standard deviation; RDW-CV – red cell distribution width, coefficient of variation; PDW – width of distribution of thrombocytes; MPV – Mean platelet volume; P-LCR – platelet large cell ratio; PCT – platelet crit; volume % of platelets, ESR – erythrocyte sedimentation rate.