ERYTHROPOIETIN RESISTANCE INDEX AND MORTALITY OF HEMODIALYSIS PATIENTS-MULTICENTER STUDY

Dimković Nada*[1], Janković Aleksandar[1], Dimitrijević Zorica[2], Veličković Radmila[2], Lazarević Tanja[3], Marić Ivko[4], Prokopović Miomir[5], Tirmenštajn Janković Biserka[6], Havidza Lilić Branimir[7]

*School of Medicine, University of Belgrade, [1]Zvezdara Univ. Medical Center, [2] Clinical Center Nis, [3] Clinical Center Kragujevac, [4] Dialysis centers Lazarevac, [5] Dialyis Center Leskovac, [6] Dialysis Center Zajecar, [7] Dialysis Center Pirot

INTRODUCTION AND AIMS: A considerable proportion of hemodialysis (HD) patients exhibit a suboptimal hematologic response to erythropoiesis-stimulating agents (ESA) and evidence suggests those patients with resistance (ERI) to have a higher mortality rate. This multi-center study was aimed to investigate the risk factors for ERI and association between ESA responsiveness and mortality in HD population.

METHODS: A prospective multicenter cohort study included seven hemodialysis centers with overall 603 patients on chronic HD for at least one year during 2015. We collected data on patient demographic factors, comorbidities, dialysis vintage and type, vascular access, body weight, ESA dose and hemoglobin concentration, as well as data on known risk factors for ESA hyporesponsiveness (mean values from multiple measurements). ERI was calculated by dividing the weekly body-weight-adjusted epoetin dose by the hemoglobin concentration. The association between ESA hyporesponsiveness and mortality was investigated by using the Cox proportional hazards model with adjustments for demographic factors, comorbidities, dialysis adequacy and serum biochemical data.

RESULTS

Table 1. Data on patients with different categories of ERI

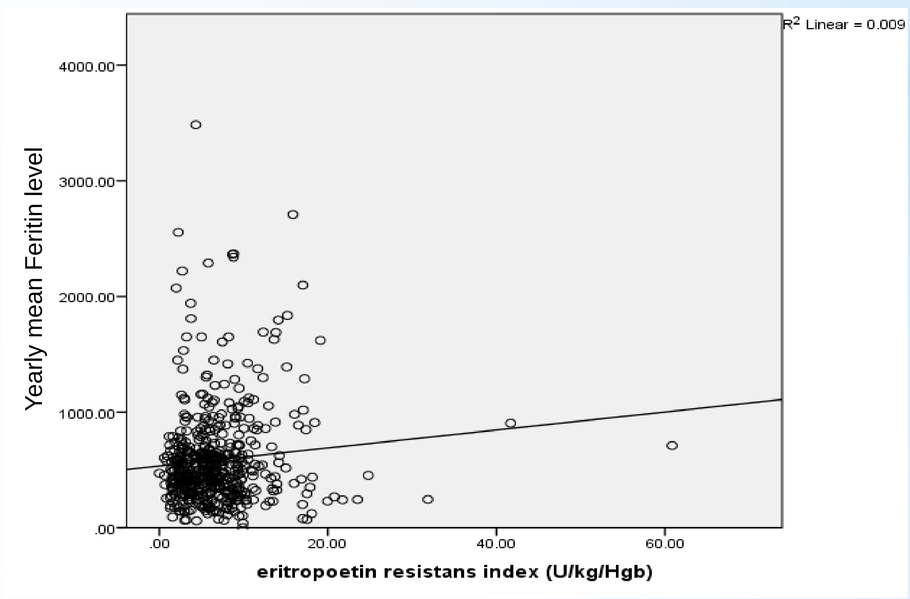
	ERI<10 (86%)	ERI>10 (14%)	p
Age	63.3±12.41	61.8±13.1	0.301
Males	63.7%	45.9%	0.003
HD vintage, m	61 ±43	60±52	0.009
DM, yes	20.3%	21.2%	0.855
HT, yes	69.5%	81.2%	0.028
Hepatitis, yes	13.5%	10.6%	0.602
nonHDF/HDF	83.8% vs.16.2%	89.4% vs. 10.6%	0.255
AVF/AVG/cath.	90%/2.3%/7.7%	87.1%/1.2%/11.8%	0.378
ACE/ARB/both	43.7%/ 55.9% /0.4%	29.6%/66.7% /3.7%	0.002
Promena doze	4.4±2.5	3.7±2.7	0.028
Feritin	562±394	724±525	0.002
Tsat	32±13	28±12	0.005
Kt/V	1.32±0.32	1.32±0.53	0.827
CRP	10.5±15.0	16.5±18.7	0.002
PTH	239±310	237±317	0.951
Albumin	36.0±3.7	36.3±2.9	0.490
CCI	2.6±1.5	3.3±1.9	0.001
Iron availability	8.0±5.4	6.1±5.1	0.005

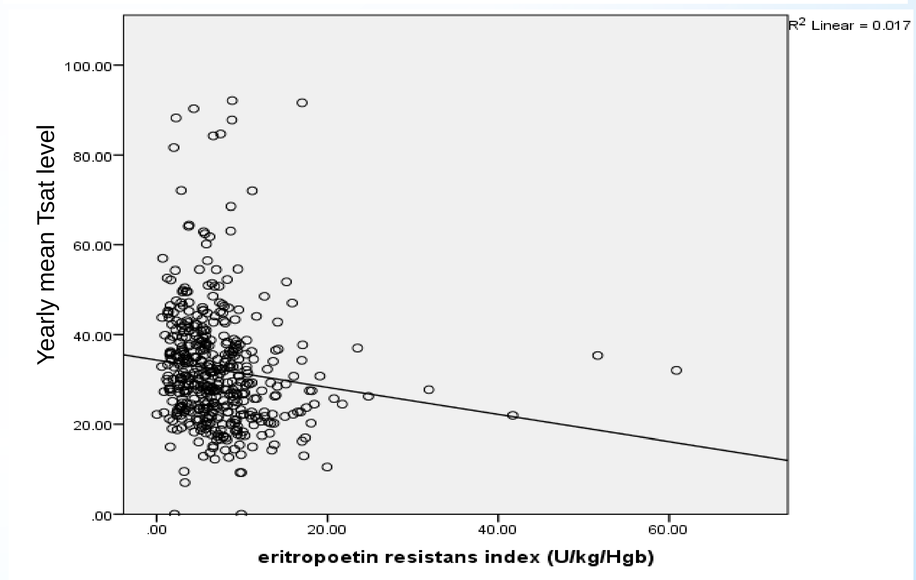
During the one-year period, 92 (15.3%) patients died, 51% from CV reasons. Significant risk factors for Mt marked by Cox multivariate analysis

PREDICTOR (univariate)	HR	CI	p
age	1.038	1.019-1.057	0.000
non-HDF treatment	3.346	1.358-8.241	0.009
Hickman catheter	2.404	1.381-4-183	0.002
Kt/V	0.277	0.148-0.518	0.000
albumin	0.925	0.895-0.956	0.000
ACE + ARB	4.864	1.481-15.975	0.009

Table 2. Risk factor for ERI>10 (multivariat analysis)

varijabla	HR	CI (95%)	p
CRP >10	2.735	1.592-4.698	0.000
Ž.pol	2.581	1.495-4.457	0.001
HD staž	0.993	0.988-0.998	0.010
ACE ili ARB	1.810	1.003-3.267	0.049
ACE + ARB	11.641	1.073-126.273	0.044
Iron availability	0.918	0.848-0.993	0.032





CONCLUSION: Although ERI above 10 caries 1.22 HR for Mt, its significance was not confirmed by multivariate analysis. Factors that cause an increase in ESA dose is likely to be of greater importance for mortality of HD patients than ERI.

DOI: 10.3252/pso.eu.54ERA.2017