



Is There a Treatment Difference of Mineral Bone Disease Among Survivals Versus Non-Survivals in Chronic Dialysis Patient (National-Wide Study)?

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on behalf of the Czech Society of Nephrology



Introduction

Chronic kidney disease is associated with profound alterations in mineral metabolism causing CKD-MBD. A growing evidence based largely on observational studies indicates that patient mortality is associated with altered mineral metabolism. Thus its proper treatment (e.g. type of phosphate binders, vitamin D analogues, etc.) can play a role, too.

The aim of our study was to compare available CKD-MBD treatment data of survivals vs. non-survivals on chronic haemodialysis treatment from the Czech Republic.

Methods

All chronic hemodialysis treatment (HD) patients (pts), i.e. >3 months on HD, reported to the Czech Registry of Dialysis Patients (RDP) between January to December 2015 were enrolled into the study. They represented about 82% of all pts receiving chronic dialysis in the country. Pts were divided according to CKD-MBD treatment into 6 groups – receiving calcitriol, paricalcitol, calcium containing phosphate binders (CaPB), lanthanum carbonate, sevelamer and cinacalcet. Pts with missing information about CKD-MBD treatment were excluded. The data of survivals versus non-survivals were compared according to age, gender, diabetic status (DM), dialysis vintage, and selected laboratory parameters (serum calcium, phosphate, parathormone, albumin, haemoglobin and Kt/V).

Results

Study population included 4225 pts from which 4082 were prevalent survivals and 143 were incident non-survivals. From all study population was 2562 (60.6%) men, mean age was 65.5 yrs, dialysis vintage was 4,3 yrs and 2341 pts suffered from diabetes.

Comparing survivals vs. non-survivals, the most frequent treatment was represented by calcitriol (63%), sevelamer (36%), CaPB (34%), and paricalcitol (27%), respectively and similar treatment distribution was found among non-survivals (see Table 1). DM was presented by 1349 pts (33.0%) vs. 59 pts (41.3%), while the dialysis vintage was almost similar (4.48 yrs vs. 4.11 yrs). The mean age was 61.5 yrs vs. 69.5 yrs, the mean levels of serum phosphate, parathormone, albumin and haemoglobin were higher in survivals. On the other hand, Kt/V and calcium level were almost same for both groups.

The CKD-MBD treatment groups were analysed by z-score. Data are summarized in Table 2.

All statistical analyses were performed on SPSS Statistics 20.0 software. Z-score test was used for the determination of statistical significance.

Conclusions

We can conclude that among chronic HD pts in the Czech Republic: i/ sevelamer treatment was proved as significantly higher in survivals. The impact of this finding to the survival can be speculated; ii/ survivals were younger but, surprisingly, they suffer more from DM. iii/ it is of interest that the s-P levels were found lower in non-survivals.

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Table 2		Age (years)	Time spent on HD (years)	DM (%)	Calcium (mmol/l)	Phosphate (mmol/l)	Parathormone (pmol/l)	Albumin (g/l)	Haemoglobin (g/l)	Kt/V
Calcitriol	Survivals	62.5	4.4	21.8	2.26	1.57	255.97	38.6	112.36	1.57
	Non-survivals	69.5	3.9	24.5	2.20	1.42	255.97	33.1	101.85	1.60
	P-value	0.000	0.956		0.019	0.030	0.753	0.000	0.000	0.549
Paricalcitol	Survivals	57.0	5.8	7.3	2.31	1.76	355.32	38.9	112.29	1.53
	Non-survivals	65.6	4.5	3.5	2.42	1.55	376.27	37.2	115.58	1.65
	P-value	0.023	0.079		0.383	0.216	0.756	0.121	0.451	0.629
Calcium phosphate binders	Survivals	60.6	4.5	11.6	2.25	1.63	272.78	38.5	112.69	1.58
	Non-survivals	68.9	4.8	11.2	2.25	1.35	298.60	33.4	104.14	1.63
	P-value	0.000	0.012		0.975	0.001	0.806	0.000	0.012	0.434
Lanthanum carbonate	Survivals	56.4	5.9	1.7	2.29	1.72	285.30	38.9	113.12	1.57
	Non-survivals	67.8	3.8	2.1	2.17	1.8	244.32	33.9	105.25	1.20
	P-value	0.062	0.621		0.268	0.533	0.550	0.126	0.281	0.265
Sevelamer	Survivals	57.6	5.2	11.0	2.30	1.76	297.67	39.4	113.03	1.54
	Non-survivals	66.3	4.0	4.2	2.28	1.65	256.19	35.2	108.14	1.65
	P-value	0.006	0.537		0.482	0.565	0.616	0.005	0.198	0.436
Cinacalcet	Survivals	53.9	7.3	2.4	2.31	1.79	409.06	39.5	113.16	1.58
	Non-survivals	64.4	10.0	0.7	2.26	1.80	199.96	33.9	95.50	1.46
	P-value	0.062	0.625		0.847	0.788	0.150	0.037	0.111	0.485
Total	Survivals	61.5	4.5	55.8	2.26	1.59	263.52	38.5	112.33	1.58
	Non-survivals	69.5	4.11	46.2	2.21	1.39	218.09	32.3	103.14	1.59
	All	65.5	4.3	51.0	2.24	1.49	240.80	35.4	115.47	1.59

Table 1	Non-survivals		Survivals	
	(n)	(%)	(n)	(%)
Calcitriol	77	54%	2590	63%
Paricalcitol	13	9%	1085	27%
Calcium phosphate binders	38	27%	1407	34%
Lanthanum carbonate	4	3%	214	5%
Sevelamer	22	15%	1471	36%
Cinacalcet	7	5%	507	12%
Total	143	3.4%	4082	96.6%

