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BACKGROUND

Restless leg syndrome (RLS) is common among in-center hemodialysis patients and is associated with sleep disturbance and depression. The pathophysiology of this syndrome is not completely understood and some authors have postulated that parathyroid hormone (PTH) and hyperphosphatemia may be implicated. Up to 80% of patients with RLS may present periodic leg movements of sleep (PLM), a well-known marker of mortality in patients under hemodialysis.

METHODS

This was a prospective cohort to evaluate the benefits of parathyroidectomy (PTx) on prevalence and severity of RLS, according to the International Restless Leg Syndrome Study Group (IRLSSG) rating scale. Overnight polysomnography was performed pre- and post-PTx (within 4 and 12 weeks, before and after surgery, respectively) in each patient, to access PLM. PLM was scored according to standard criteria (in summary: 4 or more leg movements with intervals greater than 5.0 and less than 90 seconds).

RESULTS

Eleven patients on hemodialysis with refractory hyperparathyroidism (PTH > 500 pg/ml, despite optimized clinical interventions) underwent PTx. Mean age was 49.6 ± 17.6 years, 36% were male. Pre- and post-PTx biochemical variables are described in Table 1. In 7 out of 11 patients (64%) RLS was diagnosed. The mean rating scale of the IRLSSG score was 25.7 ± 3.3 prior to operation. Two patients (18%) remained with RLS symptoms after PTx (p=0.03). In these patients the rating scale of the IRLSSG score dropped from severe to moderate, despite the unchanged iron status (Figure 1). PLM was above normal range in 4 of 7 patients with RLS (57%). PLM index (PLM events/hour of sleep) reduced from 16.3 (3.3, 41.0) to 3.5 (0.2, 1.4), although did not reach statistical significance (p= 0.102). There was a correlation between baseline serum phosphate and PLMI (Figure 2).

Figure 1. Rating scale of the IRLSSG score pre e post PTx in the RLS patients.

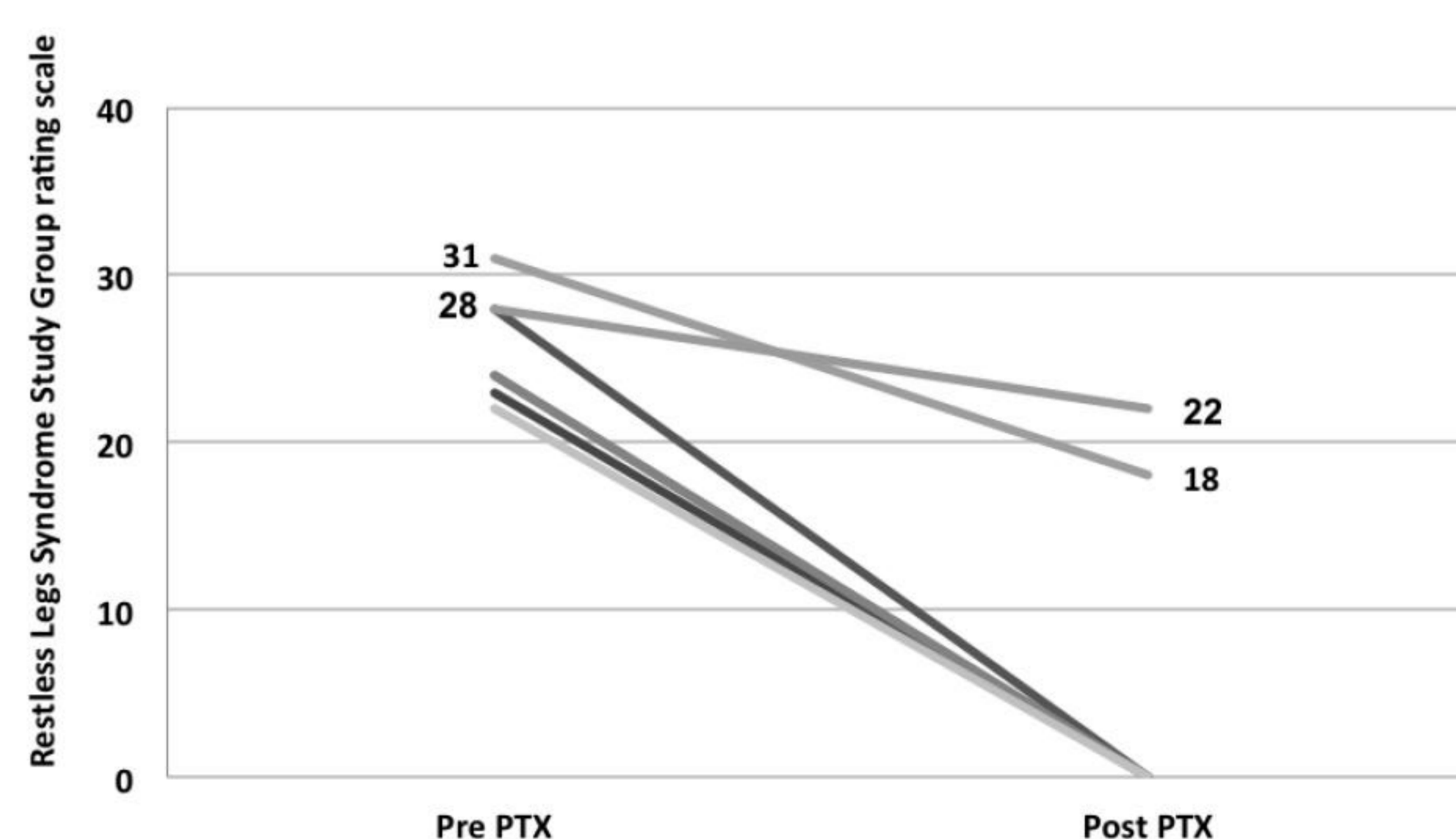


Figure 2. Correlation between periodic leg movement per hour of sleep (PLMI) pre PTx and serum phosphate.

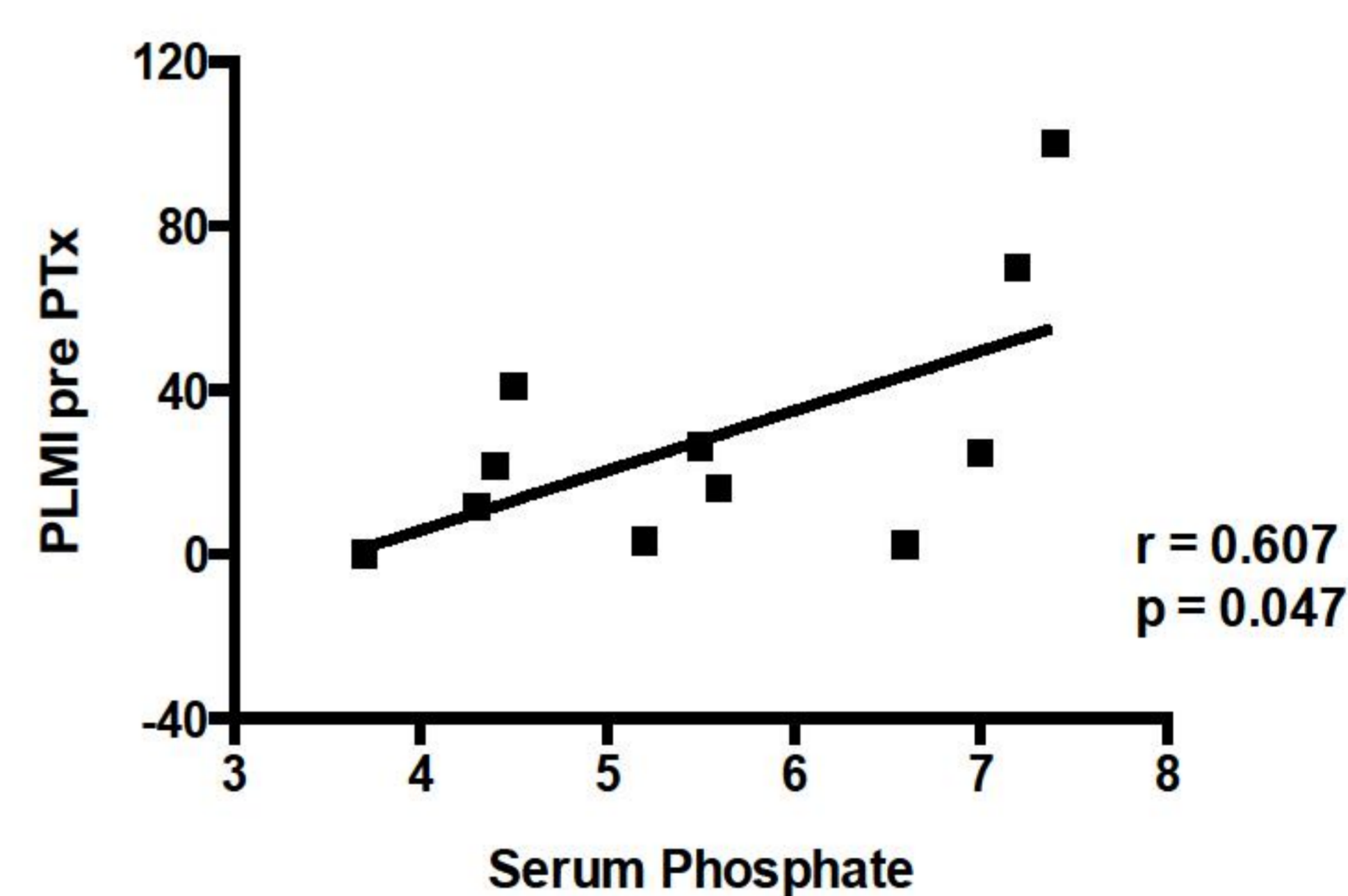


Table 2. Biochemical characteristics pre e post PTx

Variable	Pre PTx	Post PTx	p
Serum Calcium, mg/dl	9.6 ± 0.8	8.1 ± 1.2	0.005
Serum phosphate, mg/dl	5.6 ± 1.3	4.4 ± 1.5	0.052
PTH, pg/ml	1440 (1105, 2104)	73 (31, 198)	<0.0001
Iron, µg/dl	55.6 ± 13.6	53.8 ± 19.2	0.84
Ferritin, ng/ml	240 (107, 445)	620 (204, 644)	0.283
Hemoglobin, g/dl	12.2 ± 1.7	12.1 ± 2.2	0.916
Erythropoietin use, UI/week	12182 ± 5250	10273 ± 6813	0.167

CONCLUSIONS

Parathyroidectomy can alleviate RLS in patients under hemodialysis. Further studies are necessary to elucidate the exact mechanism on whether the PTx can improve RLS, and if this effect is unequivocal and independent of phosphate control.

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