

Use of SUCROFERRIC OXYHYDROXIDE ('VELPHORO') in Resistant Hyperphosphatemia

Shiva Kumar, Elizabeth Cartwright, Susan DeWaal

The Department of Renal Medicine

The Dudley Group NHS Foundation Trust, Russells Hall Hospital, Dudley, West Midlands, UK. DY1 2HQ

Introduction & Background

Hyperphosphatemia is a predictable consequence of end stage renal failure and is implicated in renal bone disease and vascular complications. Neither currently available dialysis options nor dietary restrictions are fully effective in reducing Phosphate levels. The latter possibly associated with the risk of malnutrition an additional risk factor for mortality. Phosphate binders are commonly prescribed and there is an ongoing search for an ideal agent associated with the fewest complications, highest patient compliance, low pill burden and high clinical effectiveness.

We studied the effectiveness of Sucroferic Oxyhydroxide (Velphoro) in thirty five patients on dialysis. Four were on Haemodialysis (HD), Twenty four on Haemodiafiltration (HDF) and seven on Peritoneal Dialysis (PD). 'Resistant (uncontrolled) Hyperphosphatemia' was defined as Serum Phosphate level above 1.9 mmol/l despite dietary control and optimisation of dialysis; i.e. for HD and HDF patients target Kt/V > 1.4, Urea Reduction Rate > 70 % and PD patients weekly Kt/V > 2.0. Additionally each patient was taking other Phosphate binders totalling a minimum of 9 tablets per day. All patients were reviewed regularly by a Nephrologist, Renal Dietician and Clinical Psychologist if required for compliance issues.

Methodology

Patients were prescribed Sucroferic Oxyhydroxide (Velphoro) and pre existent Phosphate binders tapered off. Twenty patients were initiated on one gram three times a day (6 tablets per day) with food. A further 15 patients started on 500 mgs three times a day (3 tablets per day) with food and dose titrated in response to serum phosphate level. No other significant changes were made in with other medications. HD and HDF patients had monthly and PD group had 2 monthly blood tests. Both groups were monitored with blood tests for Calcium, Phosphate, Haemoglobin, Ferritin, Iron saturation and Hypochromic RBC at monthly (HD and HDF), two monthly (PD) intervals. Parathyroid Hormone (PTH) was measured at 3 monthly intervals unless they are on Cinacalcet who had monthly PTH assay.

Patients were also interviewed by an independent Medical Student for a questionnaire analysis which included the following checklist:

- What medications do I take?
- What did the Doctor/dietitian say?
- What dose of the phosphate binders patient is taking?
- What time the binder is taken ?
- What do each of the medications do for the body ?
- On an average how many binders are missed per week ?
- What are the reasons for missing doses?

Demographics

The age range of the studied population was 28 to 87 years with a mean age of 58.13 years. 22 were male patients. The duration of dialysis varied between 1 to 13 years. The primary diseases were Glomerulonephritides (10), Diabetes Kidney Disease (10), Polycystic Kidney Disease (4), Unspecified (6), and others included Obstructive Nephropathy, Amyloidosis and Vasculitis.

Treatment period varied between 3 to 18 months and data analysis included 6 months follow up period.

Prescribing trends amongst individual clinicians had some variations and the total pill burden (prescribed) of the Phosphate binders were measured during the study.

Results

The mean (+ 1 SD) Phosphate level was 2.14 + 0.29 which came down to 1.69 + 0.38 mmol/l; p = 0.0002.

Most patients started responding within 4 to 8 weeks.

Eight patients (6 from the high dose initiation group) had abdominal symptoms initially but improved with time.

Sucroferic Oxyhydroxide was stopped in 3 patients and one returned back after a month with 4 tablets a day.

All had dark discoloured stool samples.

The prescribed total pill load of Phosphate binders reduced by 54% in 3 to 4 months after commencing Sucroferic Oxyhydroxide.

The common reason for missed dose included 'Pill burden' followed by 'not remembering to take the tablets'.

References

- Jurgen Floege, Adrian Covic, Markus Ketteler. *et al*, Long term effects of iron-based phosphate binder, Sucroferic oxyhydroxide in dialysis patients.
Nephrol Dial Transplant (2015)0:1-9 doi: 10.1093
- Vidhya Parameswaran, Lida H Ficociello, Carly R van zandt *et al*, ASN Poster 2016

Parameters	Mean ± SD	P value
Calcium (mmol/l)	2.39 ± 0.14 2.39 ± 0.17	0.404
Phosphate (mmol/l)	2.14 ± 0.29 1.69 ± 0.38	0.0002
PTH (pmol/l)	43.8 ± 43.1 36.9 ± 39.0	0.070
Haemoglobin (gm/l)	109.7 ± 14.4 113.1 ± 17.6	0.122
Ferritin (ug/l)	214.7 ± 163.8 211.8 ± 150.6	0.433
Iron sat (%)	27.7 ± 14.3 22.3 ± 11.7	0.073
Hyper RBC (%)	11.3 ± 13.7 10.1 ± 6.1	0.308

Figure 1.

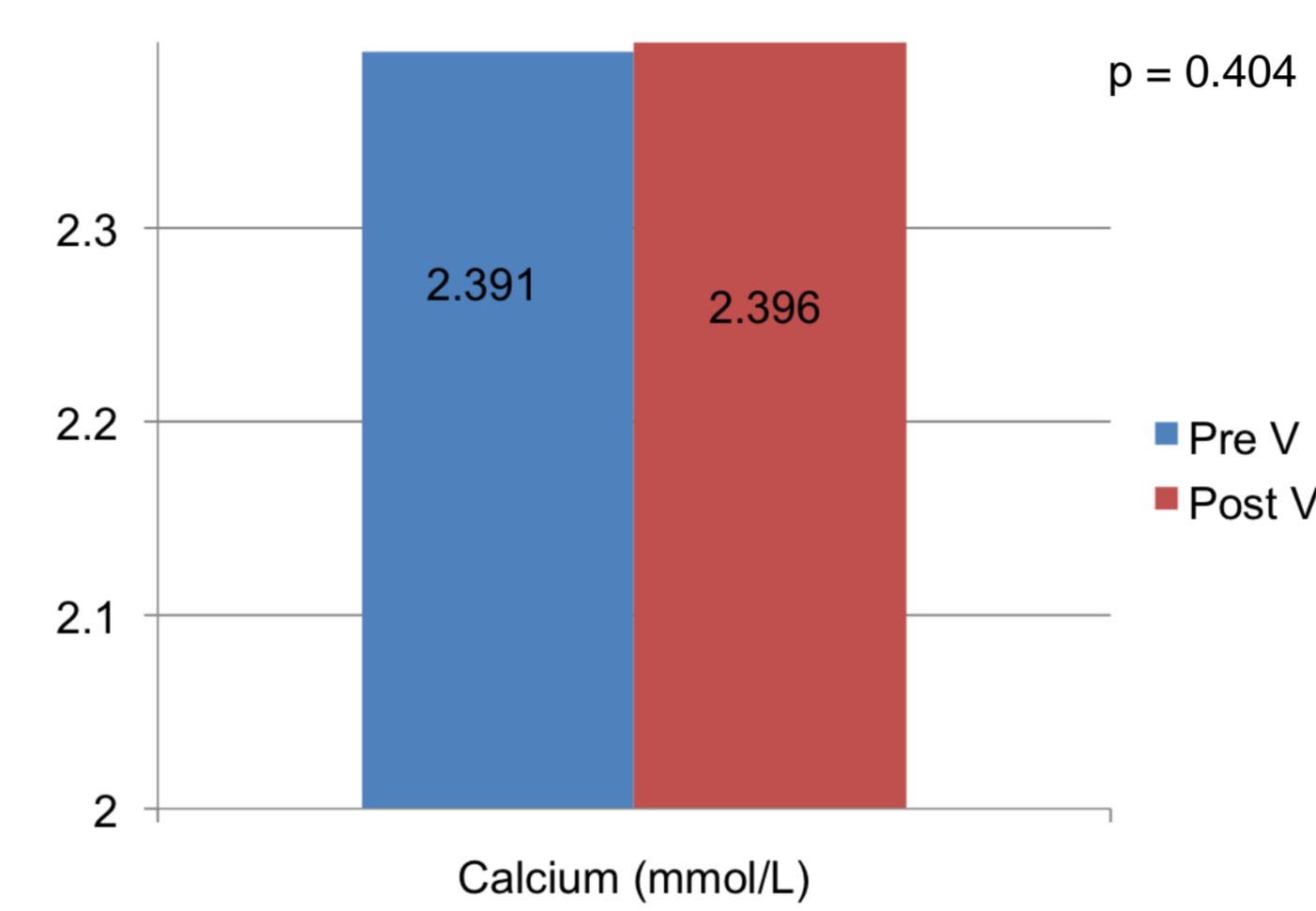


Figure 2.

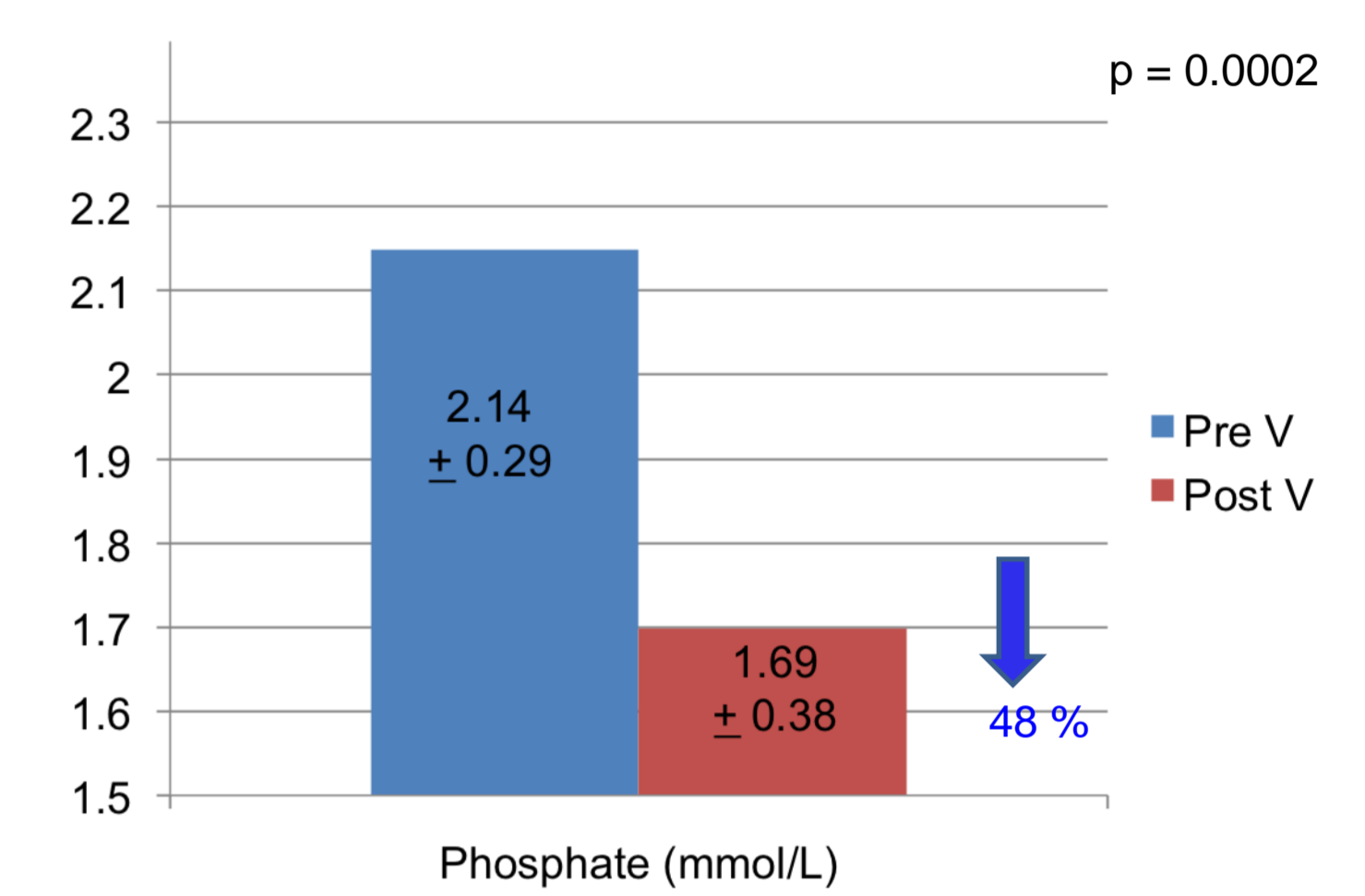


Figure 3.

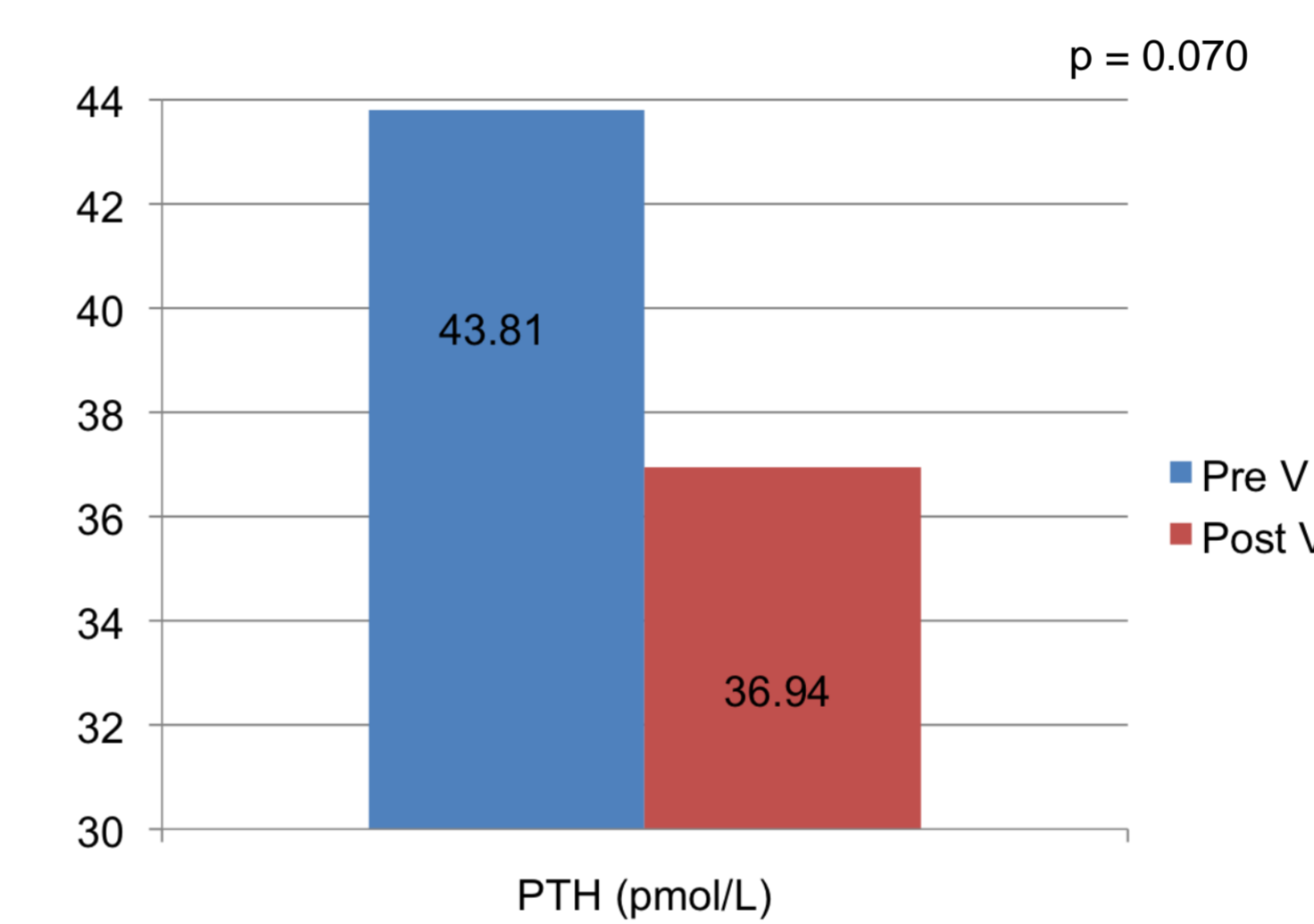


Figure 4.

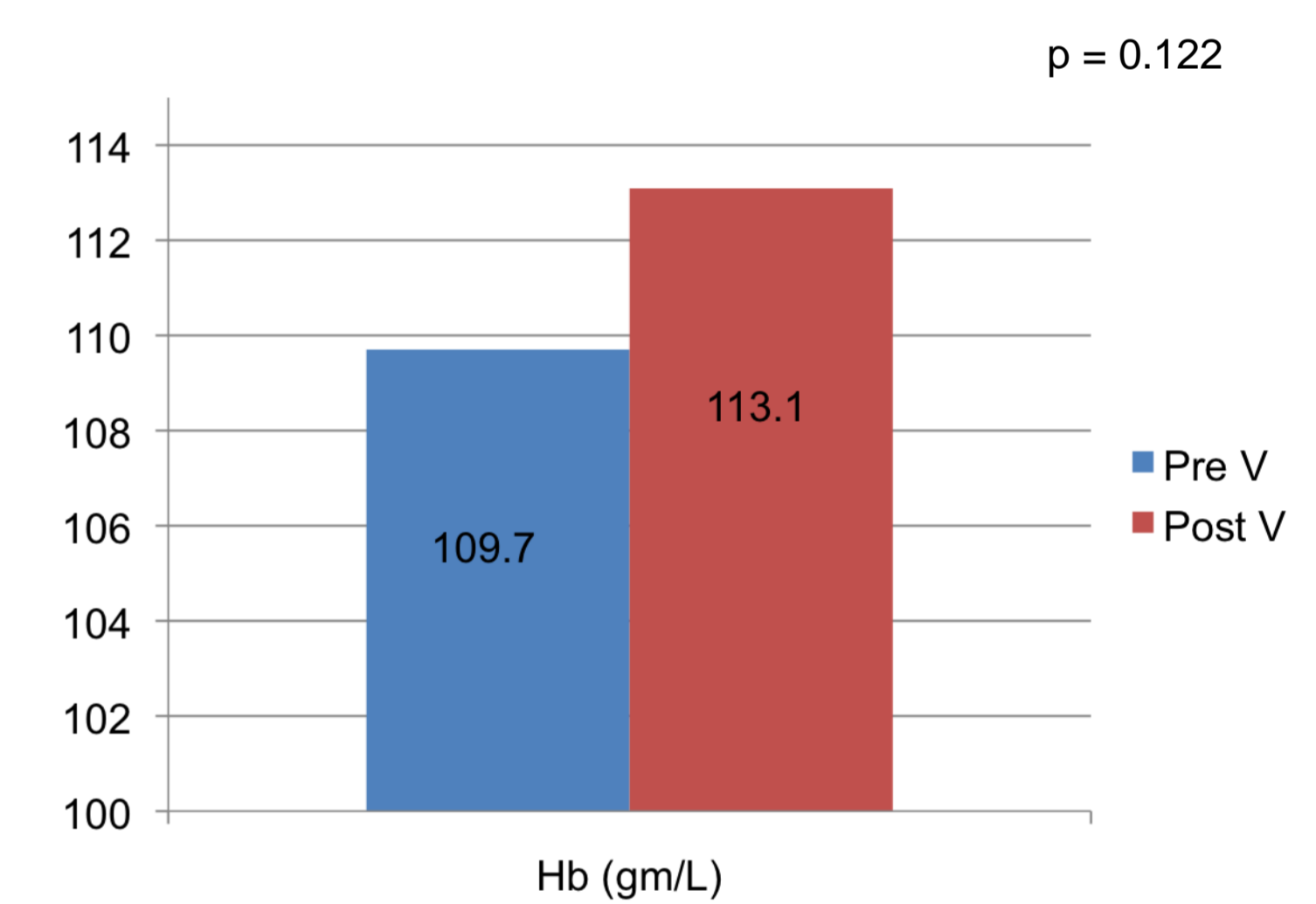


Figure 5.

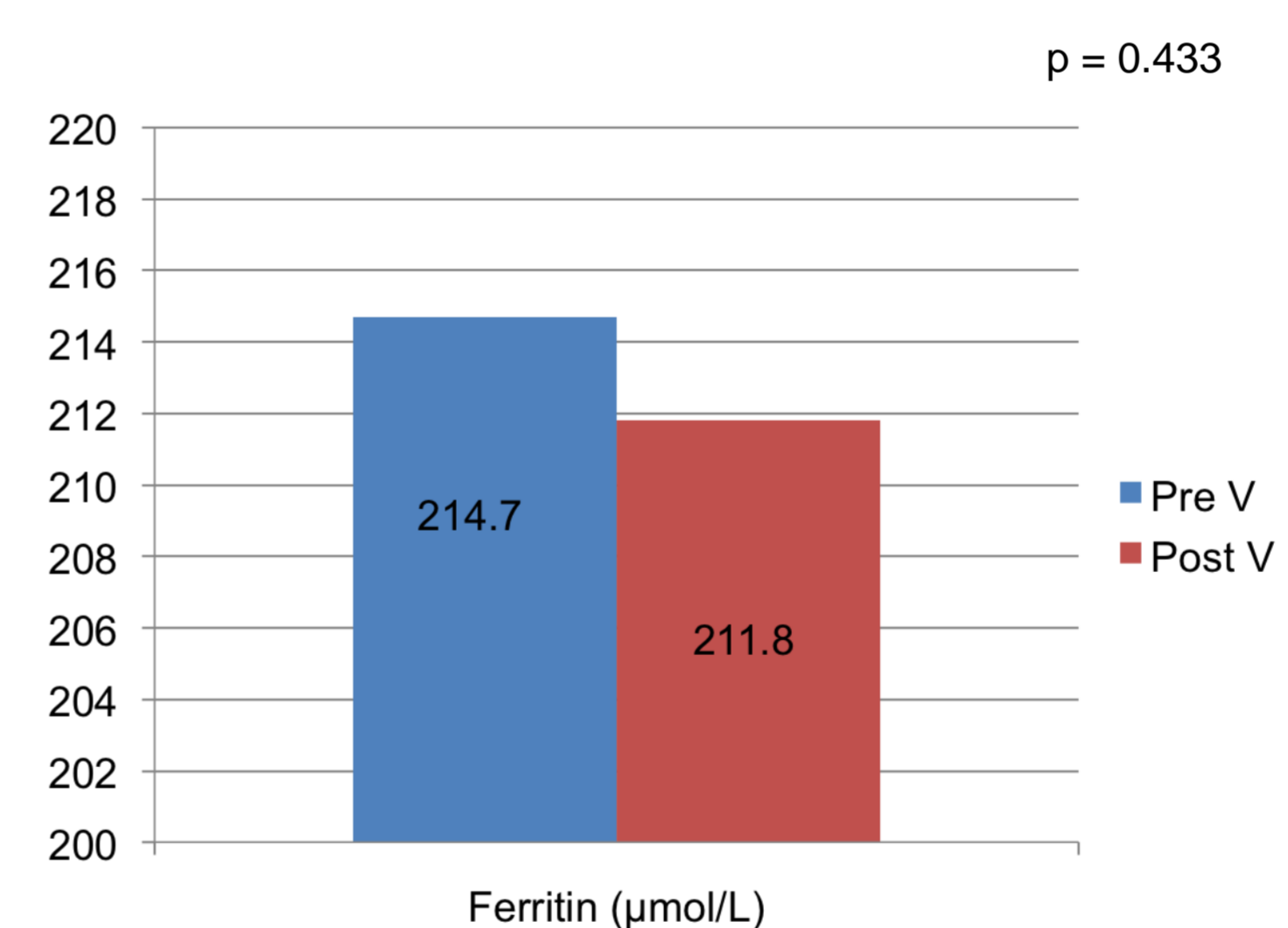


Figure 6.

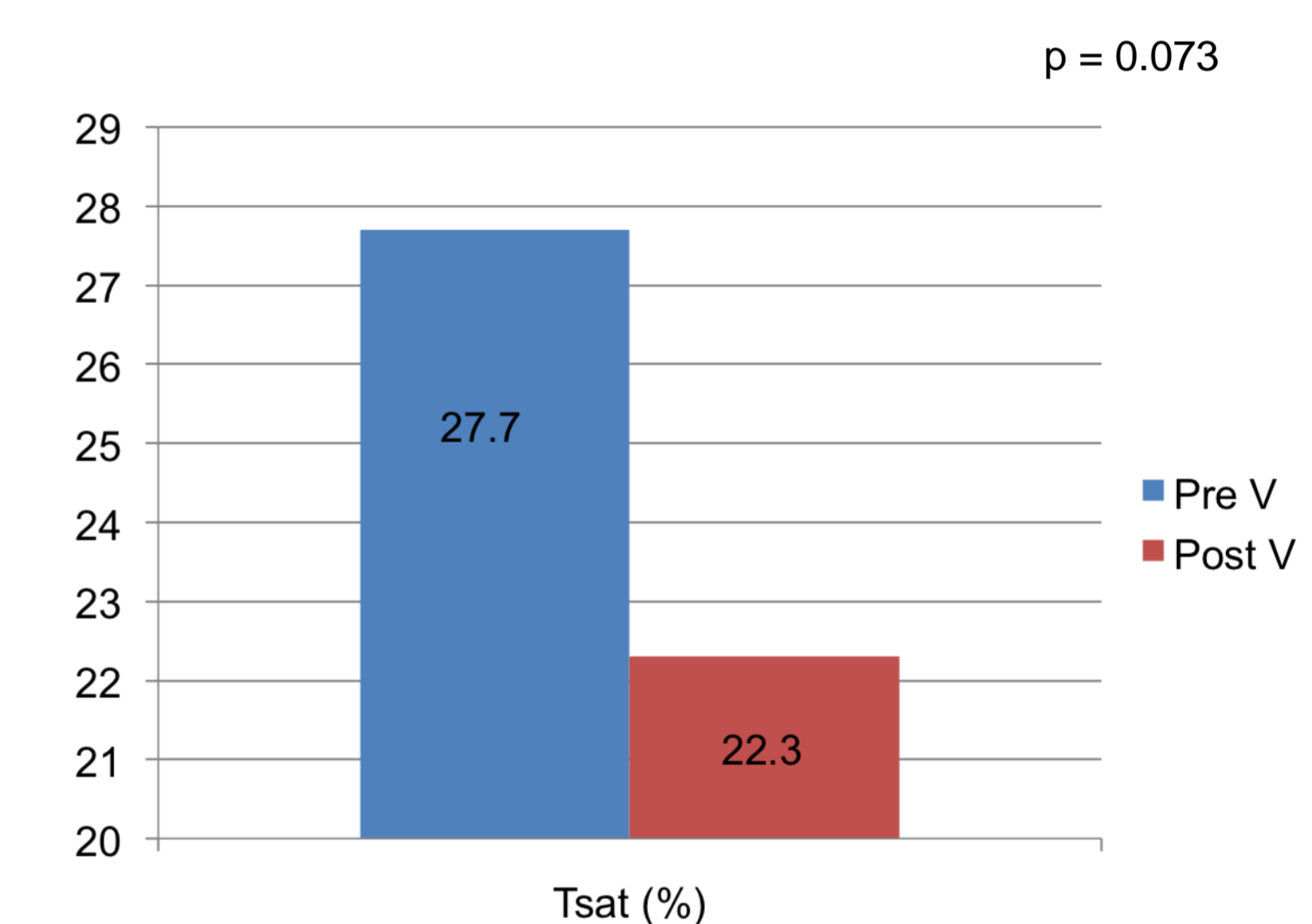


Figure 7.

Conclusion

Sucroferic Oxyhydroxide (Velphoro) is an effective Phosphate binder with 48% of patients with resistant hyperphosphataemia achieving the required KDOQ / UKRA guideline standard.

There is a significant reduction in 'Pill burden'.

The GI side effects after initiation disappeared in most patients with persistence of the medication.

Starting from a lower dose is perhaps a better option and improves the long term medication compliance.

Contact

NAME: Dr Shiva Kumar **EMAIL:** KA.Shivakumar@NHS.NET
Date: MAY 2017