腎友需要在飲食上控制磷的攝取和服用

磷結合劑來控制高血磷

	Chemical composition	RPBC	Advantages	Adverse events/ disadvantages
Aluminum hydroxide Aluminum carbonate	Aluminum	1.5 1.7	Very effective; inexpensive	Encephalopathy; adynamic bone disease; anemia; proximal myopathy
Calcium carbonate	Calcium carbonate, 500 mg (elemental calcium, 40%, 200 mg)	1	Effective; inexpensive	Gastrointestinal complications, 20% (nausea, vomiting, diarrhea, constipation); hypercalcemia, 16%; vascular calcifications
Calcium acetate (Phoslo)	Calcium acetate, 667 mg (elemental calcium, 25%, 169 mg)	1	Effective; inexpensive	Gastrointestinal complications, 20% (nausea, vomiting, diarrhea, constipation); hypercalcemia, 17%; vascular calcifications
Calcium acetate/ magnesium carbonate (Osvaren)	Calcium acetate, 435 mg/ magnesium carbonate, 235 mg (elemental calcium, 110 mg)	1/1.3	Effective; less hypercalcemia than other calcium binders; prevention of vascular calcifications	Gastrointestinal complications (nausea, diarrhea, 3.6%); muscle spasms (1.7%); hypermagnesemia (2.1%)
Sevelamer hydrochloride (Renagel)	Anion-exchange resin, 800 mg	0.75	Effective; nonclassical effects (reduces cholesterol and uric acid, anti-inflammatory action)	Gastrointestinal complications: 30% (nausea, vomiting, diarrhea, constipation); etabolic acidosis; expensive
Sevelamer carbonate (Renvela)	Anion-exchange resin, 800/2,400 mg	0.75	Effective; absence/low risk of metabolic acidosis versus sevelamer HCl	Gastrointestinal complications less than sevelamer HCl: 20% (nausea, vomiting, diarrhea, constipation); expensive
Lanthanum carbonate (Fosrenol or Foznol)	Lanthanum, 250/500/750/1,000 mg	2	Effective; no evidence of bone toxicity; improved compliance by fewer daily tablets	Gastrointestinal events: 10% (nausea, vomiting, diarrhea, constipation); rarely headache, dizziness, hypotension, myalgia; expensive

Notes: Frequencies of the most common side effects have been reported in percentage of affected patients, based on the available data in published controlled studies. Data for RPBC from[38].

Abbreviation: RPBC, Relative Phosphate-Binding Coefficient.

- **Aluminum binders have fallen out of favor because of a poor toxicity profile, including anemia, low-turnover bone disease, and dementia.**
- **Calcium binders can be associated with hypercalcemia and gastrointestinal disturbance, and they may aggravate vascular calcification.**
- **Sevelamer may aggravate metabolic acidosis and is also associated with gastrointestinal disturbance.**
- **Its more widespread use is also limited by its high cost relative to calcium binders.**

ANNA J 1999; 26: 307–16.

啊！我又忘記吃藥了

糟糕，又搞不清楚是飯前吃、飯後吃、還是要怎麼吃

真害，今天要看抽血報告，又要被念了！

Noncompliance with dietary phosphate restriction is common.

Adherence may result in protein malnutrition.

J Ren Nutr 2003; 13:219–23.

Nephrol Dial Transplant 1998; 13(Suppl 3):65–7.

Hyperphosphatemia in dialysis patients: is there a role for focused counseling?

Poduval RD[1], Wolgemuth C, Ferrell J, Hammes MS.

Author information

Abstract

BACKGROUND: Elevated serum phosphorus (P) and calcium-P product (CaXP) are associated with cardiac mortality in dialysis patients. A CaXP <55 is considered acceptable by most authorities. Because nutrition practices can modulate CaXP, we designed a survey to study the impact of the patients' levels of education and disease awareness on their CaXP.

METHODS: A survey questionnaire with 5 didactic questions pertaining to hyperphosphatemia and P-binders and 5 questions related to patient attitudes and beliefs was administered to all patients in a hemodialysis unit. The association of CaXP >55 with the patients' level of education, their score on the survey (didactic part, score 0 to 5), parathyroid hormone (PTH) levels, hyperkalemia, hypertension, and vascular disease were studied.

RESULTS: Of the 117 patients (61 men, age 56.5 +/- 18 years) who participated in the survey, 49 (42%) had CaXP >55 and 100 (85%) were on P binders. Thirty-seven (31.6%) had at least some college education. Eighty-seven patients (74%) failed to identify foods rich in P; 61% were unaware of complications related to high CaXP. Patients with CaXP >55 were less likely to have college education (20% versus 39%, P =.04), and had lower survey scores (2.4 +/- 1.3 versus 2.6 +/- 1.4, P = NS). Patients with college education scored higher (2.9 +/- 1.1 versus 2.3 +/- 1.4, P =.014). Furthermore, CaXP >55 was significantly associated with hyperkalemia (P =.02), high PTH levels (P <.001), and hypertension (P =.02), but not with >Kt/V, URR, type of hemodialysis access, or vascular diseases.

CONCLUSION: The majority of patients in the survey were ignorant of basic facts pertaining to high P and CaXP. The association of CaXP >55 with hyperkalemia, and not with Kt/V, suggests dietary noncompliance rather than inadequate dialysis. Patients with less education were more likely to have CaXP >55. Because this related mostly to misperception of simple facts that affect dietary habits, there is need for focused counseling of these patients at a level appropriate for their literacy skills.

Is it possible to control hyperphosphataemia with diet, without inducing protein malnutrition?

Rufino M[1], de Bonis E, Martín M, Rebollo S, Martín B, Miquel R, Cobo M, Hernández D, Torres A, Lorenzo V.

Author information

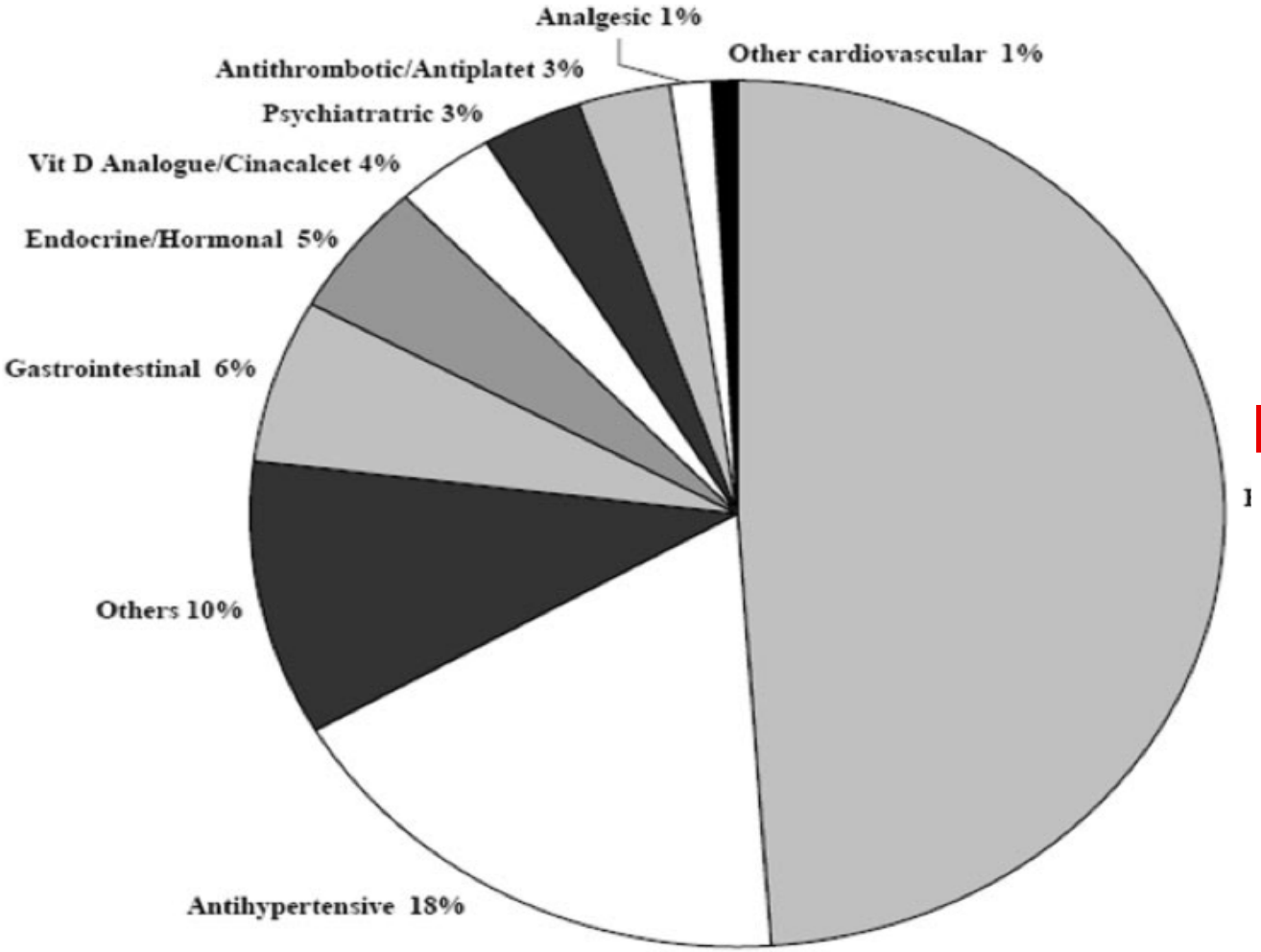
Abstract

Dietary intervention, phosphate (P) removal during dialysis and, especially, phosphate binders are current methods for the management of hyperphosphataemia. Ideally, the amount of P absorbed from the diet should equal the amount of P removed during dialysis, and this must occur in the context of an adequate protein intake. We evaluated the relationship between P intake and protein intake in 60 stable chronic uraemic patients (mean age 55+/-15 years, 25% diabetics, 68% males) on standard 4 h haemodialysis. The dietary counselling was relatively free for protein and calories. Nutrient intake was recorded during a 5 day period, and average daily ingestion of P and proteins was calculated using a computerized diet analysis system. A highly significant correlation was observed between protein and P intake. The mean daily ingestion of P and proteins was 998+/-316 mg and 64+/-19 g (1+/-0.4 g/kg/day), respectively. For an optimal protein diet of 1-1.2 g/kg/day, the P intake was 778-1444 mg. The amount of P removed by haemodialysis, extrapolated to an average week, is 250-300 mg/day. Since approximately 40% of P ingested is absorbed from the gut by uraemic patients treated with intestinal P binders, 750 mg of P intake should be the critical value above which a positive balance of P may occur. This value corresponds to a protein intake of 45-50 g per day (>0.8 g/kg body weight/day for a 60 kg patient). In patients undergoing standard chronic haemodialysis, a neutral P balance is difficult to achieve, despite phosphate binder therapy, when protein intake is >50 g. Additional protein restriction, in order to obtain a neutral balance, may impose the risk of protein malnutrition.

Poor adherence of oral phosphate binders is common because of the high pill burden.

ANNA J 1999; 26: 307–16.

Pill Burden, Adherence, Hyperphosphatemia, and Quality of Life in Maintenance Dialysis Patients



Phosphate binders 49%

Figure 2. Percentage of pill burden from different classes of medications.

Knowledge of phosphorus compared with other nutrients in maintenance dialysis patients.

Pollock JB[1], Jaffery JB.

Author information

Abstract

OBJECTIVE: This study's objective was to assess knowledge of phosphorus compared with other nutrients in patients undergoing maintenance dialysis (MD).

DESIGN: We compared knowledge of phosphorus vs. other nutrients important to the MD diet (potassium, sodium, and protein) in patients undergoing hemodialysis (HD) and peritoneal dialysis (PD). We further measured gender, age, education level, and functional health literacy to assess correlations in patient nutrient knowledge. Nutrient knowledge was measured using a 25-item Chronic Kidney Disease Knowledge Assessment Tool for Nutrition (CKDKAT-N), and functional health literacy was measured using the short form of the Test of Functional Health Literacy in Adults (S-TOFHLA).

SETTING AND PATIENTS: Patients received maintenance outpatient PD or HD at Wisconsin Dialysis, Inc. (Madison, WI).

MAIN OUTCOME MEASURE: The main outcome measure was knowledge of phosphorus vs. knowledge of potassium, sodium, and protein.

RESULTS: Forty-seven MD patients participated in the study (29 undergoing HD, 18 undergoing PD, 30 males, 17 females, average age of 58.6 (SD, 13.8) years, and average grade level of 1.4 (SD, 2.6) years of post-secondary education). Thirty-five participants had adequate health literacy, 4 had marginal health literacy, and 8 had inadequate health literacy. The CKDKAT-N scores ranged from 6-21 for 25 items, with a mean score of 13 (SD, 2.91). Knowledge of phosphorus compared with knowledge of other nutrients was poor (0.38 vs. 0.72, P = .003). In a comparison of HD vs. PD patient knowledge, both phosphorus (0.37 vs. 0.42, P = .231) and other nutrients (0.69 vs. 0.80, P = .115) were the same.

CONCLUSION: Despite regular dietary instruction, patients undergoing MD have a poor knowledge of dietary phosphorus content, compared with knowledge of other nutrients important in chronic kidney disease. Interestingly, there was no difference in nutrition knowledge when comparing PD and HD patients, despite differences in education level and health literacy between groups.

J Ren Nutr. 2007 September ; 17(5): 323–328.

Knowledge of Phosphorus Compared with Other Nutrients in Maintenance Dialysis Patients

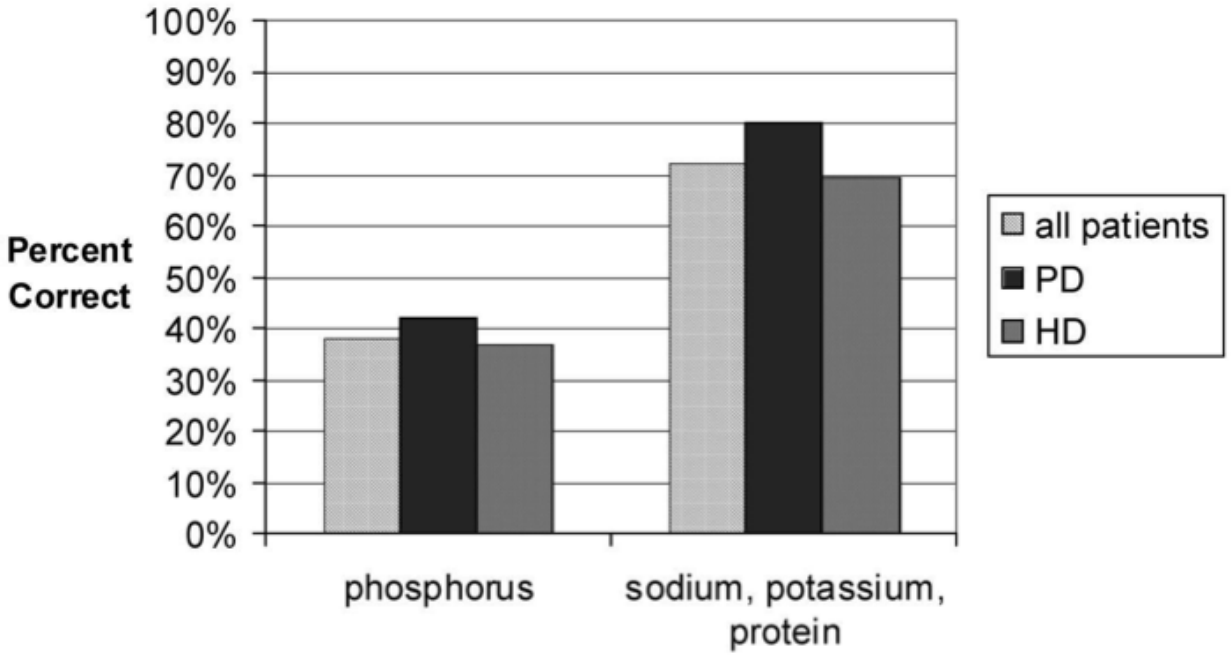


Figure 3.
Phosphorus knowledge in all patients (hatched white bar) is worse than knowledge of other nutrients (p=0.003). The knowledge is equally poor in PD patients (dark gray bar) as compared to HD patients (light gray bar), p = 0.231. The PD and HD patients had far better knowledge of other nutrients, and scores were NS between groups in these categories, p = 0.115.

儘量避免攝取過量高磷食物，

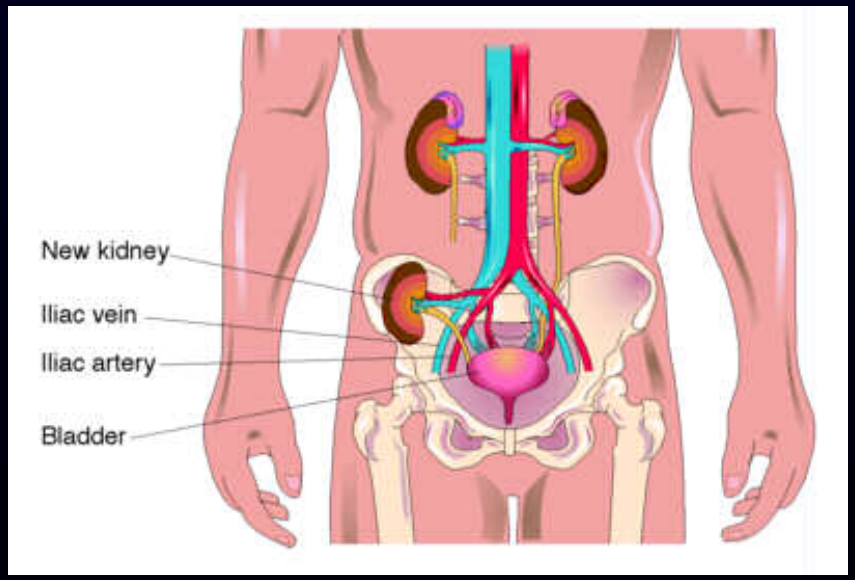
因為

再多的藥物也無法

完全處理攝取過量高磷

腎衰竭病人高磷問題最好的治療是：

- **腎臟移植**

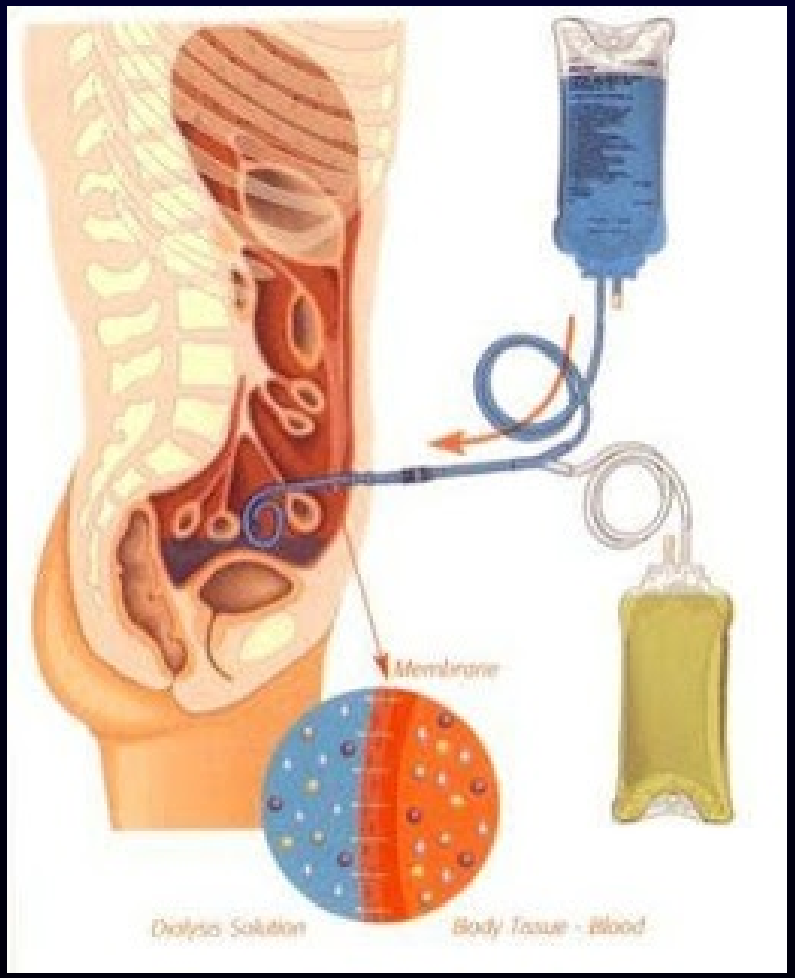


Take Home Message

Taichung Park, Taiwan


今天的結論是 …

- Hyperphosphatemia is a highly prevalent problem in PD
- Because maintaining the recommended protein intake results in considerable phosphate absorption, even with the use of phosphate binders.
- Total phosphate clearance depends on both RRF and peritoneal clearance, and may fall substantially as RRF declines.



Residual Renal Function

「降磷」抗戰　—　防「鈣

如何成功控制血磷值


INGREDIENTS
phosphoric acid
sodium aluminum phosphate
polyphosphates

飲食查詢


飲食查詢
回上一頁
分類
疾病
全部
全部
營養成分
食譜套餐
市售商品
白飯
雞丁腰果
青江菜
香草夾心餅乾
草莓夾心薄酥
杏仁茶
芬達橘子汽水
每餐統計量 您的體重 公斤
熱量(大卡) 888
蛋白質(克) 29
脂肪(克) 29
鈉(毫克) 196
鉀(毫克) 483
磷(毫克) 339
克(CC)
點選食物右上角可切換份量
存檔列印
1
返回
重新選擇

飲食大挑戰

離開遊戲

正確
0

錯誤
0

BMI
身高
體重

選擇食物類別

提示

結束練習

炸湯圓

油脂類

主食類

水果類

奶類

肉魚豆蛋

蔬菜類

打擊食物 - 測驗模式


離開遊戲
分數
0
時間
5
BMI
身高
體重
目前選擇食物類型為:高鉀
最慢
慢
中
快
最快
洋芋片
水梨
百頁豆腐
菠菜
請打擊所選擇的食物類型

We should focus on limiting dietary phosphate intake and maximizing phosphate binder use.

Equilibration of phosphate across the peritoneal membrane is slow, and peritoneal phosphate clearance correlates much better with Cr clearance than with Kt/V urea.

Patients with hyperphosphatemia should not be treated with NIPD because of the limited phosphate clearance provided by this intermittent modality, even when Kt/V urea is adequate.

謝謝大家