

The aim of the present investigation was estimation of incidence and risk factors of the malnutrition development in CRF patients treated with CAPD. Nutritional status was studied in 244 PD patients (97 women, 146 men; age 59.58 ± 16.55 years) being under CAPD during 1-104 (median 30) months. Anthropometric (body mass index, dermatofatty fold over 3-headed muscle, Subjective Global Assessment SGA, normalized protein catabolic rate nPCR) and biochemical indices (hemoglobin Hb, serum albumin SALB, serum pre-albumin Spre-ALB, serum cholesterol SChol) were used for nutritional status estimation. The overall mean body mass index was 28.18 ± 47.11 . The mean level of hemoglobin was 101.30 ± 23.81 g/L, Scr was 857.28 ± 336.17 $\mu\text{mol/L}$, KT/V was 2.25 ± 0.73 . The overall mean SALB was 30.67 ± 5.58 g/L, 74.2% patients on low SALB (SALB < 35 g/L). The mean level of Spre-ALB was 331.63 ± 91.43 mg/L, 35.66% patients on low Spre-ALB (Spre-ALB < 300 mg/L). The mean level of PCR was 0.93 ± 0.24 g/kg.d, 59.01% patients on low level PCR (PCR < 1 g/kg.d). The mean dermatofatty fold over 3-headed muscle was 13.42 mm. 25% patients had a SGA score of 1-4 (malnutrition range). The prevalence of malnutrition was 18.03%. The main cause (44.6%) of death is infection in our study, and the majority of these patients were complicated with different level of malnutrition. In conclusion, the results indicate that malnutrition is quite common and plays an important role in mortality in CAPD patients independent of dialysis efficacy and prevention or treatment of malnutrition by suitable means is necessary to improve clinical outcomes in CAPD patients.

<http://dx.doi.org/10.1016/j.krcp.2012.04.530>

207 EFFECTS OF 12 WEEKS NUTRITION EDUCATION ON NUTRITIONAL STATUS IN HEMODIALYSIS PATIENTS

Harin Rhee, KeumSook Jang, Sang Heon Song, Il Young Kim, Eun Young Seong, Soo Bong Lee, M.D IhmSookKwak

Division of Nephrology, Pusan National University Hospital, Republic of Korea

Protein-energy malnutrition is present in a large proportion of patients with end stage renal disease and, is a strong risk factor for mortality in these patients. This study was aimed to evaluate the effectiveness of 12-weeks nutrition education during the hemodialysis session for the improvement of nutritional status. From the June 2011 to the September 2011, patients who were on regular hemodialysis in Pusan National University Hospital were enrolled in this study. In education group, intensive nutrition education was performed by the hemodialysis nurse, for fifty to sixty minutes during the hemodialysis session, once a week. Curriculum for renal nutrition includes regular taking of their medication, intake of moderate amount of protein and sufficient calories, reduction of water, salt, potassium and phosphate intake. Otherwise, any education program was not performed in patients of control group. Nutrition status was assessed by the subjective global assessment (SGA), body mass index (BMI), triceps skinfold thickness (TSF), arm muscle area (AMC) and laboratory markers such as serum albumin, serum blood urea nitrogen (BUN) and hemoglobin (Hb) level before and after the education. Effect of nutrition education was analyzed using ANCOVA test. A total of 49 patients were enrolled in this study and nutrition education was provided to 25 hemodialysis patients. Their mean age was 57.20 ± 15.49 in education group and 55.13 ± 14.42 in control group and male was 56.0% in education group and 50.0% in control group and, other baseline characteristics were not significantly different between two groups. After the 12-week education, significant improvement was found in SGA, serum albumin, BUN and Hb level. SGA score was improved from 6.36 ± 0.99 to 6.72 ± 0.61 in education group, compared to control group (6.38 ± 0.88 to 6.42 ± 0.88 , $p=0.029$). Improvement of serum albumin level, BUN and Hb was as follows: serum albumin (4.23 ± 0.28 to 4.30 ± 0.25 in education group, 4.28 ± 0.39 to 4.13 ± 0.34 in control group, $p=0.040$), serum Hb (10.45 ± 1.49 to 11.13 ± 1.74 in education group, 10.51 ± 1.12 to 10.04 ± 1.02 in control group, $P=0.004$), serum BUN (66.52 ± 18.76 to 70.94 ± 17.26 in education group, 59.50 ± 13.61 to 58.68 ± 13.88 in control group, $p=0.032$). 12 week nutrition education during the hemodialysis session by hemodialysis nurse was effective

<http://dx.doi.org/10.1016/j.krcp.2012.04.531>

208 HIGH SALT INTAKE IN PREGNANCY ALTERS MATURATION OF GLOMERULI IN THE RAT OFFSPRING

Nadezda Koleganova¹, Grzegorz Piecha², Eberhard Ritz²

¹Institute of Pathology, University of Heidelberg, Heidelberg, Germany.

²Department of Internal Medicine, University of Heidelberg, Heidelberg, Germany

There is currently discussion on the optimal salt intake and uncertainty whether both high and low salt intake is associated with adverse effects. One aspect has so far not been considered, i.e. the potential impact of salt intake during pregnancy on kidney function and blood pressure in the offspring. Faulty fetal programming, amongst others by high or low salt intake, leads to alterations in kidney morphology and albuminuria in the offspring. A low number of glomeruli is known to cause high blood pressure later in life. It was the purpose of the present study to clarify whether very high (or low) salt intakes in pregnancy affect kidney development in the offspring. Sprague-Dawley rats were fed normal (0.15%), medium (1.3%), or high (8.0%) salt diet during pregnancy and weaning. The number of glomeruli (mature, immature, and S-shape bodies) was assessed at 1 week postnatally. The expression of proteins of interest was assessed (by western blotting) at 1 week postnatally and at term. There was no difference between the groups with respect to litter size, birth weight, and placenta size. At age 1 week the number of S-shaped bodies was significantly lower (405 ± 308) and the number of mature glomeruli (818 ± 405) and layers of developing glomeruli (7.1 ± 0.6) was significantly higher in the offspring of mothers on high-salt compared to the medium or low salt groups (1044 ± 490 , 460 ± 304 , and 5.9 ± 0.9 respectively). As a net result the total number of glomeruli was significantly lower in the offspring of mothers on high-salt (9476 ± 1264) compared to the medium or low salt groups (11175 ± 1920). At 1 week of age in the offspring of mothers on high salt the glomeruli were bigger compared to lower salt intake. The expression of Pax-2 ($54 \pm 23\%$ vs. $100 \pm 28\%$) and FGF-2 ($72 \pm 33\%$ vs. $100 \pm 30\%$) was significantly lower in the offspring of mothers on high-salt consistent with their causative role. We conclude that high maternal salt intake during pregnancy accelerates maturation of glomeruli in the offspring, but reduces the final number of glomeruli.

<http://dx.doi.org/10.1016/j.krcp.2012.04.532>

209 UREMIC TOXIN MANAGEMENT WITH PRE- AND PROBIOTICS: A META-ANALYSIS

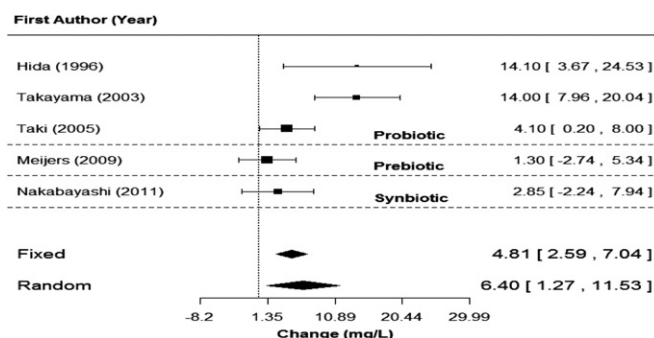
Megan Rossi¹, David W Johnson¹, Kerenaftali Klein², Katrina L Campbell¹

¹Princess Alexandra Hospital, Brisbane, Queensland, Australia.

²School of Population Health, University of Queensland

This review evaluated the effectiveness of pre-, pro- and synbiotics on reducing a nephro-vascular uremic toxin, indoxyl sulphate (IS), involved in cardiovascular disease in chronic kidney disease. A review of the literature using Cochrane, PUBMED, EMBASE and CINAHL was conducted from 1951 to 2011 (inclusive). Studies were included if they reported change in IS (or their precursors) as outcome measures in pre-, pro- or synbiotic interventions with a duration of more than one day, were in English language, in human adults with chronic kidney disease (Stage I to V (dialysis)). From the 87 papers identified, five met the inclusion criteria involving 87 patients, all of whom were receiving hemodialysis.

One study investigated prebiotics, three probiotics and one synbiotics. The quality of the studies was limited (GRADE either low or very low). Summary statistics were translated into means and standard errors, assuming normal distribution.



There is limited but supportive evidence for the effectiveness of pre- and probiotics on reducing IS in the chronic kidney disease population. Well-designed fully-powered studies are needed in order to evaluate the potential use of this treatment in the clinical setting.

<http://dx.doi.org/10.1016/j.krcp.2012.04.533>