NEPHROLOGY.CLINICAL SCIENCE

PS-BPC01-1  SAFETY AND EFFICACY OF USING CEREAL FOOD (FRUGRA®) TO IMPROVE BLOOD PRESSURE AND BOWEL HEALTH IN PATIENTS WITH CKD

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Background: Hypertension is known to increase the risk of developing cardiovascular disease, chronic kidney disease (CKD), and death. One of the main causes of hypertension is excessive salt intake. Frugra®, a cereal food that has a low salt content of 0.5 g per serving, may help reduce salt intake. Additionally, Frugra is rich in dietary fiber, thereby beneficial for CKD patients.

Methods: We enrolled 11 patients who underwent maintenance hemodialysis (HD), and 20 non-dialysis CKD patients. The usual breakfast was replaced with Frugra for 8 weeks, and the effects on blood pressure, urinary toxins, bowel movements, and body composition were examination.

Results: In HD patients, Frugra reduced BNP and significantly decreased systolic and diastolic blood pressure. In addition, almost all subjects showed improved bowel movements, and blood levels of indoxyl sulfate, a urea toxin derived from intestinal bacteria, were significantly reduced. In non-dialysis CKD patients, decrease in blood pressure levels, improvement in stool characteristics measured by bristol scale and improvement in bowel movements and indoxyl sulfate levels were also tended to be decreased.

Conclusion: These results suggest that intake of Frugra in patients with CKD could be a useful tool for health and may contribute to the prevention of cardiovascular disease by correcting blood pressure and fluid retention, improving the intestinal environment, and lowering urinary toxins.

PS-BPC01-2  A NOVEL PREDICTION MODEL OF ACUTE KIDNEY INJURY BASED ON COMBINED BLOOD VARIABLES IN STEMI

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Background: Development of acute kidney injury (AKI) is associated with poor prognosis in patients with ST-segment elevation myocardial infarction (STEMI).

Objective: We sought to investigate whether a combination of pre-procedural blood tests could predict the incidence of AKI in patients with STEMI.

Methods: A total of 908 consecutive Japanese patients with STEMI who underwent primary percutaneous coronary intervention within 48 hours of symptom onset were recruited and divided into derivation (n = 617) and validation (n = 291) cohorts. A risk-score model was created based on a combination of parameters assessed on routine blood tests on admission.

Results: In the derivation cohort, multivariate analysis showed that the following 4 variables were significantly associated with AKI: blood sugar ≥ 200 mg/dL (odds ratio [OR] 2.07), high-sensitive troponin I ≥ 1.6 ng/mL (upper limit of normal × 50) (OR 2.43), albumin ≥ 3.5 mg/dL (OR 2.85) and estimated glomerular filtration rate < 45 mL/min/1.73 m2 (OR 2.64) (Table 1). Zero to four points were given according to the number of those factors. Incremental risk scores were significantly associated with a higher incidence of AKI in both cohorts (p < 0.001) (Figure 1). Receiver operating characteristic curve analysis of risk models showed adequate discrimination between patients with and without AKI (derivation cohort: area under the curve [AUC] 0.754, 95% confidence interval [CI] 0.733 – 0.846; validation cohort: AUC 0.754, 95% CI 0.644 – 0.839) (Figure 2).

Conclusions: Our novel laboratory-based model might be useful for early prediction of the post-procedural risk of AKI in patients with STEMI.

PS-BPC01-3  DETERMINATION OF AORTIC STIFFNESS USING TWO ESTABLISHED ALGORITHMS

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Objectives: Arterial stiffness is a risk factor for cardiovascular disease. Aortic stiffness is assessed by determination of pulse wave velocity using pulse transit time and the distance between carotid and femoral arteries. Transit time is obtained by using the foot-to-foot method to define the transit time through intersecting tangents algorithm or the point of maximal upstroke during systole (2nd derivative). Millasseau et al have proposed a formula for converting transit time between methods using SphygmoCor (intersecting tangents) and the Complior Analyse and using Millasseau formula.

Methods: In a cross-sectional study of heterogeneous subjects, aortic stiffness was assessed by the Complior device which uses 2nd derivative. The pulse waveforms were extracted and used for the analysis by custom MATLAB algorithm for intersecting tangents, and the results were compared to the formula proposed by Millasseau.

Results: The preliminary results of the first 24 patients (men: 71%; mean age: 61 ± 18 years) show that Millasseau formula underestimate the transit times values by about 19% in comparison with the transit times obtained by the intersecting tangents method using MATLAB software (50 ± 19 ms vs 62 ± 19 ms; P < 0.001).

Conclusions: Our preliminary results allow us to conclude that the values of pulse wave velocities obtained with Millasseau formula overestimate values as compared to the values obtained by intersecting tangents method. Increasing the number of subjects will allow us to examine the possibility of a more reliable formula for converting transit times between methods.

PS-BPC01-4  THE CLINICOPATHOLOGICAL FINDINGS IN NON-DIABETIC CKD PATIENTS WITH CARDIOVASCULAR AUTONOMIC NEUROPATHY

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Background: Cardiovascular autonomic neuropathy (CAN) is common as the process of kidney injury. Coefficient of variation of R-R interval (CVR-R) is one of the most convenient, noninvasive tests of heart rate variability, and is widely

Table 1

| Variable | Coefficient | p-value | Odds ratio | 95% CI |
|----------|-------------|---------|------------|-------|
| Blood sugar ≥ 200 mg/dL | 2.07 | <0.001 | 2.07 ± 0.02 |
| High-sensitive troponin I ≥ 1.6 ng/mL (upper limit of normal × 50) | 2.43 | 0.001 | 2.43 ± 0.02 |
| Albumin ≥ 3.5 mg/dL | 2.85 | 0.001 | 2.85 ± 0.02 |
| Estimated glomerular filtration rate < 45 mL/min/1.73 m2 | 2.64 | 0.001 | 2.64 ± 0.02 |

Figure 1: ROC curve for the prediction of AKI. The area under the curve (AUC) is 0.754 (95% CI 0.733 – 0.846).

Figure 2: Comparison of risk models. The laboratory-based model (left) and the Millasseau formula (right) are shown.

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