Low Protein Diet

- In chronic kidney disease (CKD), hyperfiltration appears in the remnant glomeruli with subsequent histological lesions and decreased glomerular filtration rate.
- Low-protein diet is a means to protect residual renal function and slow disease progression of CKD in end-stage renal disease (ESRD) by reducing protein-related glomerular hyperfiltration, leading to reduction in glomerular capillary pressure and filtration32-34, and hypertrophy35.
- Early 1980s highlighted the importance of protein restriction in the reduction of phosphorus intake in moderate to advanced CKD36.
- Moderate dietary protein restriction is an effective way of delaying functional renal deterioration37.

Objectives

To evaluate
i) effect of combined therapy of very low protein diet (vLPD) and ketonaalogues on renal function of patients in CKD stages 1-3, and
ii) to study compliance to very low protein diet.

Material And Methods

Study Design: Prospective randomized controlled study
Ethics Committee Approval: The clinical trial was approved by ethics committee of the institute.
The project was funded by the institute as intramural research grant no. P-2003-001-01-11. Ketonaalogues tablets were purchased from the grant and patients were provided medicine free of cost.

Sample size: Minimum sample size derived using Student’s t-test was 30 (10 patients in each group) 0.05 % significance level and power of 80%.

Therefore we recruited 40 patients, 20 (15 males and 5 females) in each group.

Exclusion criteria: Patients with cancer, systemic disease, obstructive uropathy and rapid progression of glomerulosclerosis.

Results

Table 1. Dietary Intake Of Patients At Visit 1 and 2

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<thead>
<tr>
<th>Group</th>
<th>Dietary Intake</th>
<th>Visit 1</th>
<th>Visit 2</th>
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<tr>
<td></td>
<td>Protein g/kg/d</td>
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<td>Energy kcal/kg/d</td>
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<td>Potassium mg/kg/d</td>
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<td>Glucose mg/dl</td>
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Figure 1. Hemoglobin Level of Patients at Visit 1 and 2.

Figure 2. Fasting Blood Sugar of Patients at Visit 1 and 2.

Figure 3. Serum Creatinine of Patients at Visit 1 and 2.

Figure 4. Glomerular Filtration Rate of Patients at Visit 1 and 2.

Figure 5. Serum Albumin Level of Patients at Visit 1 and 2.

Conclusion

GFR was preserved at 47.0 ml/min in the intervention group while in the control the GFR decreased from 53.1±2.94 ml/min to 37.8±1.0 ml/min in 10 months.
At the end of the study, the serum albumin level was higher in the intervention group compared to control group.

Supplementation with ketonaalogues can prevent decline in renal function even without adherence to very low protein diet.

Right dosing of the ketogenic supplements is required in addition to ensuring strict compliance of dietary restrictions.

While prescribing vLPD supplemented with ketogenic is important to ensure optimal intake of energy in order to preserve nutritional status.

References