Thesis Title	Renal Functional Reserve in Vegetarian Adolescents
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Abstract

High protein intake increases renal solute load and glomerular filtration rate (GFR), while prolonged vegetarian diet consumption decreases renal load. This study assesses renal function in vegetarians by evaluating GFR and renal functional reserve after a high meat meal, in comparison with the renal responses in omnivores.

The study was carried out in two groups of subjects; an experimental group of lactovegetarian adolescents (LVA), who had followed a vegetarian diet for 1-4.75 years and a control group of mixed-diet adolescents (MDA). Each group contained, ten males and ten females, 12-15 years of age.

Both groups underwent the same experimental processes. The first part was to assess baseline GFR using 24-hour creatinine clearance. The second part was to measure the renal functional reserve or GFR after a high protein (1.2 g/kg.BW) meal of cooked chicken breast providing 9.85 kcal/kg.BW. After the meal GFR was assessed by measuring creatinine clearance every 30 minutes for three and a half hours. The baseline GFR and renal functional reserve were compared in both groups.

The following results were obtained:

1. Baseline GFR in LVA was significantly lower than that in MDA; the values were 72.60 ± 7.74 ml/min/1.73 m^2 in the former and 89.27 ± 14.89 ml/min/1.73 m^2 in the latter ($P< 0.001$).

2. GFR was significantly increased after meat load in both groups. The peak GFR in MDA was obtained earlier at 30 minutes after the meal (157.33 ± 58.67 ml/min/1.73 m^2) while the peak GFR in LVA did not appear until 120 minutes after the meal (116.37 ± 20.51 ml/min/1.73 m^2).

3. The increment of GFR was greater in MDA, 76.24% compared with 60.30% in LVA group (or 79.09% of the MDA group).

4. The anthropometric and blood chemistry data showed that the LVA group has significantly lower weight, height, BSA, serum cholesterol concentration, serum uric acid concentration and hematocrit. The menarche in LVA also appeared rather late.

The results show that prolonged vegetarian diet intake (1-4.75 years) in adolescents, affects renal function resulting in a lower baseline GFR and a lower and slower response to animal protein load. A Long-term vegetarian diet might alter protein digestion and absorption in the small intestine which further affects renal blood flow and GFR. Vegetarian adolescents exhibit lower level of serum uric acid and cholesterol, but they also tend to have lower hematocrit and sometimes growth spurt retardation.