HALVTIDSKONTROLL

Fredagen den 2 november kl. 14.00 - 16.00

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Avdelningen för njurmedicin

"Studies on muscle mass and aortic calcification in relationship to kidney function and the effects of exercise training in patients with chronic kidney disease stages 3-5"

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VÄLKOMNA!
Studies on muscle mass and aortic calcification in relationship to kidney function and the effects of exercise training in patients with chronic kidney disease stages 3-5.

Background

Impaired physical performance, muscle wasting and arteriosclerosis are common in patients with chronic kidney disease (CKD) and are associated with increased morbidity and mortality. Exercise training has been shown to increase physical performance in these patients, but there is little knowledge on effects on muscle mass and arteriosclerosis. We aimed to study the relationships between GFR, muscle mass and aortic calcification, and the effects of 12 months exercise training in non-dialysis dependent patients with CKD stages 3-5.

Methods

This study is part of the RENEXC trial (www.ClinicalTrials.gov; NCT02041156), a randomized controlled exercise training study in CKD patients not on renal replacement therapy. The first and second studies are cross-sectional baseline analyses of the relationships between GFR, muscle mass and abdominal aortic calcification (AAC) in 148 patients. The third and fourth studies are prospective analyses of the effects of 12 months of strength- or balance- in combination with endurance training on muscle mass and plasma myostatin; and on AAC, plasma interleukin-6, interleukin-10 and fetuin A, in 112 patients who completed the RENEXC trial.

Preliminary results

Lower muscle mass was significantly related to lower GFR. The higher degree of calcification in the abdominal aorta was strongly associated with lower GFR, lower plasma albumin, higher plasma phosphate, higher pulse pressure, and cardiac structural changes. Leg muscle mass in the balance group increased significantly after
12 months, but not in the strength group, and was positively related to the increase in quadriceps strength. Plasma myostatin was positively related to lean muscle mass and physical performance and increased significantly in both groups after 12 months of exercise training.

**Significance**

Muscle wasting and aortic calcification occurred relatively early in the course of CKD, and were related to GFR decline, indicating that treatment should be initiated well before patients start dialysis. We showed that exercise training could attenuate muscle wasting. Plasma myostatin might be an important indicator of muscle mass and strength in non-dialysis dependent patients with CKD. These results elucidate the changes in body composition and arteriosclerosis, which occur with loss of GFR and the importance of exercise training in the CKD population.