ABSTRACT

Background: Chronic kidney disease and hemodialysis are closely related to reactive oxygen species (ROS) and inflammation, which is in line with an increase in pro-inflammatory cytokine transcription factor nuclear factor *κappa* B (NF-κB). Intradialytic exercise improves antioxidant status, nitric oxide (NO), which is believed to contribute to the inhibition of inflammation and increases the fitness and functionality of chronic kidney disease (CKD) patients, as seen from creatinine and glomerular filtration rate (GFR).
Research purposes: This study aimed to determine the effect of intradialytic exercise on creatinine levels, NF-κB, and GFR in patients with chronic kidney failure undergoing hemodialysis.
Method: A total of 18 samples were randomly divided into a control group (n = 9) and a treatment group (n = 9), which were administered intradialytic exercises for 30 minutes for 2 times a week for 3 months. EDTA blood samples were collected before and shortly after the last treatment. Plasma was separated, creatinine levels were measured using the spectrophotometric method and NF-κB was measured using the ELISA method. The GFR was obtained from the calculation of weight, age, and creatinine levels.
Results: The plasma creatinine level in the intradialytic exercise group was lower than that in the control group, although the difference was not statistically significant (P =0.788). The GFR value in the intradialytic exercise group was higher than that in the control group, although the difference was not statistically significant (p=0.656). The NF-κB levels in the intradialytic exercise group were higher than those in the control group, but the difference was not statistically significant (p=0.387).
Conclusion: Intradialytic exercise in patients with chronic renal failure undergoing hemodialysis improves kidney function by decreasing plasma creatinine levels, increasing GFR values, and increasing NF-κB levels.

Keywords: Intradialytic exercise, creatinine, GFR, NF-κB

INTISARI

Latar Belakang: Penyakit ginjal kronis dan hemodialisa erat kaitannya dengan *reactive oxigen species* (ROS) dan inflamasi yang sejalan dengan peningkatan faktor transkripsi *nuclear factor κappa B* (NF-κB) sitokin pro inflamasi. Latihan intradialitik meningkatkan status antioksidan, *nitric oxide* (NO) yang diyakini berkontribusi pada penghambatan terjadinya inflamasi serta peningkatan kebugaran dan fungsional dari pasien penyakit ginjal kronik (PGK) yang dilihat dari kreatinin dan *glomerular filtration rate* (GFR).
Tujuan Penelitian: Penelitian ini bertujuan untuk mengetahui efek latihan intradialitik terhadap kadar kreatinin, NF-κB dan GFR pasien gagal ginjal kronis yang menjalani hemodialisa.
Metode: Sebanyak 18 sampel yang dibagi secara acak menjadi kelompok kontrol (n=9) dan kelompok perlakuan (n=9) yang diberikan latihan intradialitik dengan durasi 30 menit selama 2 kali perminggu selama 3 bulan. Sampel darah EDTA diambil sebelum perlakuan dan sesaat setelah perlakuan terakhir. Plasma dipisahkan, diukur kadar kreatinin dengan metode spektrofotometri dan NF-κB diukur dengan metode ELISA. GFR didapat dari hasil perhitungan berat badan, usia dan kadar kreatinin.
Hasil Penelitian: Kadar kreatinin plasma kelompok latihan intradialitik lebih rendah dibandingkan kelompok kontrol walaupun tidak bermakna secara statistik (p=0,788). Nilai GFR kelompok latihan intradialitik lebih tinggi dibandingkan kelompok kontrol meskipun tidak bermakna secara statistik (p=0,656). Kadar NF-κB kelompok latihan intradialitik lebih tinggi dibandingkan kelompok kontrol namun tidak bermakna secara statistik (p=0,387).
Kesimpulan: Latihan intradialitik pada pasien gagal ginjal kronis dengan hemodialisa memperbaiki fungsional ginjal dengan penurunan kadar kreatinin plasma serta peningkatan nilai GFR dan meningkatkan kadar NF-κB.

Kata Kunci: Latihan intradialitik, kreatinin, GFR, NF-κB