

Serum zinc levels in hemodialysis and peritoneal dialysis patients: A retrospective observational study

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Background: Zinc is vital for cellular functions, but kidney failure increases zinc deficiency risk. We compared zinc levels in hemodialysis (HD) and peritoneal dialysis (PD) patients in Isfahan, Iran. **Materials and Methods:** A retrospective study included 150 patients (75 PD and 75 HD). Serum zinc levels were assessed through photometry. Statistical analysis employed Chi-square, independent t-test, and correlation. **Results:** Serum zinc was below normal in both groups ($P < 0.01$). HD patients had lower zinc levels (70.85 ± 7.68 $\mu\text{g/dL}$) compared to PD (75.04 ± 13.55 $\mu\text{g/dL}$, $P = 0.021$), remaining significant after adjusting for confounders ($P = 0.011$). **Conclusion:** Zinc levels in PD and HD patients are lower than in the general population, with HD patients having lower levels than PD patients.

Key words: Hemodialysis, peritoneal dialysis, serum zinc.

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INTRODUCTION

Zinc, the second-most abundant trace element in the human body, plays a vital role in the structure and function of numerous enzymes.^[1] It is involved in DNA repair, immune function, and various physiological processes.^[2]

Chronic kidney disease (CKD) is characterized by abnormal kidney structure or function for over 3 months, with significant implications for health.^[3] Its progression to end-stage renal disease (ESRD) necessitates kidney replacement therapy (KRT) with hemodialysis (HD) and peritoneal dialysis (PD) being the two primary modalities.^[4]

However, KRT is not without its complications, and electrolyte imbalances, including zinc deficiency, are among them.^[5]

ESRD patients are a unique population with specific risk factors and challenges, and it is essential to understand how different aspects of their health, including trace element levels like zinc, are affected by the type of KRT.

MATERIALS AND METHODS

This retrospective observational study was conducted in two Isfahan hospitals from March 21, 2019, to March 21, 2020. The research was approved by the ethics committee of Isfahan University of Medical Sciences. The study included 150 ESRD patients, equally divided into PD and HD groups based on specific inclusion criteria. These criteria required patients to be older than 18 years, all of them used to receive zinc supplements (nephrovit contains 25 mg of zinc), and be free of active infections in the past 6 months.^[6] Patients who had undergone kidney transplantation were excluded from the study.

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