Abstract Type : Poster exhibition
Abstract Submission No.: A-0277
Abstract Topic : Renal Conservative Care + Geriatric Nephrology + Sarcopenia

Association of Functional Sarcopenia with Clinical Outcomes in ESKD

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Objectives : Functional sarcopenia, first introduced in the 2023 Korean Working Group on Sarcopenia Guideline, is defined by low muscle strength (MS) and physical performance (PP) without a corresponding decrease in muscle mass (MM). It is well established that sarcopenia, characterized by low MM, worsens the prognosis of patients with end-stage kidney disease (ESKD). This study aimed to analyze the clinical impact of functional sarcopenia on patients with ESKD.
Methods : We enrolled ESKD patients undergoing follow-up at the nephrology clinic, who underwent sarcopenia assessments between March 2023 and September 2024. Sarcopenia assessment included measuring MM with bioimpedance analysis, MS with handgrip strength assessment, and PP with 5-time chair stand test. Survival curves for overall mortality and hospitalization were analyzed using Kaplan-Meier method.
Results : Among the total of 300 patients, 12 (4%) patients were unable to perform the handgrip strength test, and 122 (40.7%) were unable to complete the 5-time chair stand test due to weakness; they were categorized as having low MS and low PP, respectively. The number of patients with low MM, low MS, and low PP was 111 (37%), 208 (69.3%), and 232 (77.3%), in that order. Based on these parameters, patients were classified into three groups (Table 1). There were 92 (30.7%) patients with functional sarcopenia, 18 (6%) with sarcopenia, and 88 (29.3%) with severe sarcopenia. There were no differences between the functional sarcopenia and sarcopenia groups except for body mass index and appendicular skeletal muscle index. During the follow-up period (13.3±5.0 months), 13 patients (4.3%) died and 76 (25.3%) were hospitalized. Mortality and hospitalization rates were similar between the functional sarcopenia and sarcopenia groups (Figure 1).
Conclusions : Functional sarcopenia, despite the absence of MM decrease, exhibited clinical outcomes consistent with sarcopenia. Proactive intervention for patients with functional sarcopenia is expected to reduce the medical and social burdens in an aging society.

Table1.jpg

THE KOREAN SOCIETY OF NEPHROLOGY
KSN 2025 SEOUL, KOREA
June 19 (Thu) – 22 (Sun), 2025 Coex, Seoul, Korea
Beyond Challenges, Towards Healthier Kidney

Variable	All (N=300)	Normal (N=102)	Functional Sarcopenia (N=92)	Sarcopenia (N=106)	*p*-value
Sex (Male), n (%)	179 (59.67)	62 (60.78)	59 (64.13)	58 (54.72)	0.388
Age (years)	62.50 ± 13.12	54.73 ± 12.35	64.80 ± 12.40	67.97 ± 10.81	**<0.001**
Body mass index (kg/m2)	24.44 ± 4.29	25.61 ± 4.28	26.17 ± 4.29	21.92 ± 2.94	**<0.001**
Serum creatinine (mg/dL)	7.93 ± 3.64	9.35 ± 4.34	7.64 ± 3.23	6.82 ± 2.70	**<0.001**
Cystatin C (mg/L)	6.37 ± 1.62	6.41 ± 1.63	6.30 ± 1.66	6.39 ± 1.59	0.924
Blood urea nitrogen (mg/dL)	56.41 ± 31.71	60.82 ± 33.98	54.46 ± 32.68	53.87 ± 28.27	0.224
Phosphorus (mg/dL)	5.18 ± 2.00	5.63 ± 2.49	4.99 ± 1.79	4.90 ± 1.52	**0.018**
Albumin (g/dL)	3.65 ± 0.59	3.90 ± 0.49	3.60 ± 0.60	3.47 ± 0.59	**<0.001**
Hemoglobin (g/dL)	9.90 ±1.64	10.15 ±1.65	9.68 ± 1.43	9.84 ± 1.78	0.134
ASM index (kg/m2)	6.97 ± 1.50	7.73 ± 1.38	7.57 ± 1.27	5.71 ± 0.81	**<0.001**
Hand grip strength (kg)	19.43 ± 8.80	27.64 ± 7.33	16.03 ± 5.65	14.32 ± 6.26	**<0.001**
5-time chair stand (seconds)	16.62 ± 10.98	11.27 ± 4.52	23.37 ± 13.09	20.98 ± 12.63	**<0.001**

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