\* Risk factors or causes of frailty among CKD patients.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | Effect (descriptions) | | Risk Difference | Frailty Assessment | Sample Size | CKD severity | Reference |
| Biological | |  | |  |  |  |  |  |
|  | Cardiovascular | Hypertension\* | | RR 1.6 (1.26-2.04) | Fried Phenotypes | 205 | CKD stage 5D (hemodialysis) | 1\* |
| Peripheral vascular disease\* | | RR 1.58 (1.34-1.8) | Fried Phenotypes | 205 | CKD stage 5D (hemodialysis) | 1\* |
| Left ventricular dysfunction\* | | RR 1.18 (1.03-1.36) | Fried Phenotypes | 205 | CKD stage 5D (hemodialysis) | 1\* |
|  | Cerebrovascular | Cerebrovascular Accident | | RR 1.34 (1.19-1.5) | Fried Phenotypes | 205 | CKD stage 5D (hemodialysis) | 1\* |
|  | Pulmonary | COPD | | OR 1.68 (1.16-2.45) | Fried Phenotypes | 10256 | CKD stage 1-5 | 2 |
|  | Immunological | Inflammatory | |  |  |  |  |  |
|  | IL-6\* | Worse frailty | Fried Phenotypes | 762 | CKD stage 5D (hemodialysis) | 3\* |
|  | CRP | Adjusted, OR 1.76 (1.28-2.41) to 1.50 (1.07-2.09) | Fried Phenotypes | 5888 | Chronic kidney insufficiency, serum creatinine ≥1.3mg/dL | 4 |
|  | Fibrinogen |
|  | Endocrinologic/ Metabolic | Diabetes | | Frailty scores +0.7 points per year | Fried Phenotypes | 762 | CKD stage 5D (hemodialysis) | 3\* |
| OR 1.68 (1.16-2.45) | Fried Phenotypes | 10256 | CKD stage 1-5 | 2 |
|  | Cancer | Cancer | | OR 1.89 (1.19-2.99) | Fried Phenotypes | 10256 | CKD stage 1-5 | 2 |
|  | Arthritis | Arthritis | | OR 3.34 (2.08-5.38) |  |  |  |  |
|  | Laboratory Data | eGFR (mL/min/1.72m^2) | |  |  |  |  |  |
|  | eGFRcys <30 | Frailty prevalence 2.8 | Fried Phenotypes | 336 | CKD stages 1-4 | 5\* |
| eGFRcys 30-44 | Frailty prevalence 2.1 |
| eGFRcys >60 | Referent |
| Serum Albumin Concentrations (g/dL) | | Frailty scores  -1.1 points per g/dL | Fried Phenotypes | 762 | CKD stage 5D (hemodialysis) | 3\* |
| Serum Creatinine <4 mg/dL\* | | RR 1.46 (1.22-1.71) | Fried Phenotypes | 205 | CKD stage 5D (hemodialysis) | 1\* |
| Testosterone, per 50% lower free testosterone\* | |  | Fried Phenotypes | 440 | CKD stage 5D (hemodialysis), men | 6\* |
|  | being frail | OR 1.40 (1.05-1.53) |
|  | becoming frail over 12 months | OR 1.40 (1.07-1.73) |
| Hemoglobin | | Adjusted, OR 1.76 (1.28-2.41) to 1.50 (1.07-2.09) | Fried Phenotypes | 5888 | Chronic kidney insufficiency, serum creatinine ≥1.3mg/dL | 4 |
| LDL, HDL | |
| Lifestyle | | Smoking\* | | RR 1.18 (1.04-1.34) | Fried Phenotypes | 205 | CKD stage 5D (hemodialysis) | 1\* |
| Ethnicity | | Hispanic\* | | Frailty scores +0.6 points per year | Fried Phenotypes | 762 | CKD stage 5D (hemodialysis) | 3\* |

Bibliography

1. YadlaM, JohnJ, MummadiM. A study of clinical assessment of frailty in patients on maintenance hemodialysis supported by cashless government scheme. *Saudi J Kidney Dis Transplant*. 2017. doi:10.4103/1319-2442.198102

2. Wilhelm-LeenER, HallYN, MKT, ChertowGM. Frailty and chronic kidney disease: the Third National Health and Nutrition Evaluation Survey. *Am J Med*. 2009;122(7):664-71 e2. doi:10.1016/j.amjmed.2009.01.026

3. JohansenKL, DalrympleLS, DelgadoC, et al. Factors Associated with Frailty and Its Trajectory among Patients on Hemodialysis. *Clin J Am Soc Nephrol*. 2017;12(7):1100-1108. doi:10.2215/CJN.12131116

4. ShlipakMG, Stehman-BreenC, FriedLF, et al. The Presence of Frailty in Elderly Persons with Chronic Renal Insufficiency. *Am J Kidney Dis*. 2004;43(5):861-867. doi:10.1053/j.ajkd.2003.12.049

5. RoshanravanB, KhatriM, Robinson-CohenC, et al. A prospective study of frailty in nephrology-referred patients with CKD. *Am J Kidney Dis*. 2012;60(6):912-921. doi:10.1053/j.ajkd.2012.05.017

6. ChiangJM, KaysenGA, SegalM, ChertowGM, DelgadoC, JohansenKL. Low testosterone is associated with frailty, muscle wasting and physical dysfunction among men receiving hemodialysis: a longitudinal analysis. *Nephrol Dial Transplant*. 2018. doi:10.1093/ndt/gfy252