

中文題目：血液透析病人衰弱程度與接受新冠疫苗體液免疫反應之相關性

英文題目：Frailty and humoral immune responses following COVID-19 vaccination among patients undergoing hemodialysis

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Background: Patients with end-stage kidney disease who are undergoing dialysis have reduced immune responses to COVID-19 vaccination. Frailty is extremely common among dialysis patients and may contribute to the impaired immunogenicity. This study aimed to determine the association between frailty and humoral immune responses following COVID-19 vaccination in hemodialysis patients.

Method: Adult hemodialysis patients without prior SARS-CoV-2 infection who received a priming dose of ChAdOx1 nCoV-19, an adenovirus-vectored vaccine, were assessed for eligibility. Participants were categorized as robust, pre-frail, or frail using the Fried frailty criteria. Humoral responses were assessed 28 days after vaccination by measuring titers of anti-spike IgG antibodies. The primary outcome was anti-spike antibody seroconversion, defined as antibody levels ≥ 50 AU/mL. Multivariable-adjusted logistic regression models were used to assess the association between frailty status and the primary outcome.

Results: A total of 206 participants (mean age 67 years, 50% women) were included in the study, of whom 50 (24%) were characterized as frail, 86 (42%) were characterized as pre-frail, and 70 (34%) were characterized as robust. Anti-spike antibody levels were progressively lower with more advanced stages of frailty ($P < 0.001$). Compared with robust patients, a significantly smaller proportion of pre-frail and frail patients developed anti-spike antibody seroconversion (87%, 66%, and 40%, respectively; $P < 0.001$). Frailty was associated with the absence of humoral responses after adjustment for age, sex, body mass index, diabetes, coronary artery disease, serum albumin, and lymphocyte count (odds ratio, 0.25; 95% CI, 0.08–0.80; P for trend = 0.025).

Conclusion: Frailty is independently associated with impaired humoral responses following COVID-19 vaccination among hemodialysis patients. Strategies aimed at preventing or attenuating frailty in the dialysis population are warranted.