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Association of Serum Albumin with Skin Cancer in Patients without Chronic Kidney Disease: Analyses of the 2017 – 2023 National Health and Nutrition Examination Survey

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Objectives : Both skin cancer and chronic kidney disease (CKD) involves in chronic inflammatory statereflecting by hypoalbuminemia. The magnitude of the association of serum albumin (SA) with risk of skin cancer based on presence or absence of CKD is unknown. We aim to determine an association of serum albumin level with skin cancer in patients with cancer stratified by CKD.
Methods : A cross-sectional study included population from the 2017-2023 NHANES. The association between SA with skin or other types of cancers was evaluated by multivariable logistic regression stratified by CKD (<60 vs. ≥60 mL/min/1.73 m2).
Results : Of 17,846 adults, mean±SD was 51±19 years and 53% were female. Mean SA was 4.1±0.4 g/dL. Distribution of SA and eGFR were shown in Figure 1A and 1B. Among 2,175 participantswith any cancers, 21% had skin cancer and had significant higher SA than those with other cancers (4.1±0.3 vs 3.9±0.3 g/dL; meandiff 0.1; P 0.0002). Up to 8% had CKD and mean eGFR was 46±13 and 99±19 mL/min/1.73 m2 for CKD and non-CKD groups, respectively. eGFR was not different between skin and other cancer groups (Figure 2A). Distribution of SA by cancer types and CKD status was shown in Figure 2B. After adjusting for demographic, BMI, history of diabetes, hypertension, hyperlipidemia, liver disease, hs-CRP, eGFR, urinary microalbumin:creatinine ratio, and level of education, every 1 g/dL increase in serum albumin was associated with higher odds of skin cancer in overall and patients without CKD, but not those with CKD (aORoverall (95%CI) 2.53 (1.25, 5.11), P 0.010; aORnon-CKD 2.30 (1.03, 5.15), P 0.043; aORCKD 5.19 (0.88, 30.67), P 0.063).
Conclusions : SA were positively associated with risk of skin cancer than other types of cancers in patient without CKD, but not those with CKD given hypoalbuminemia common seen in patients with CKD may confound the association.

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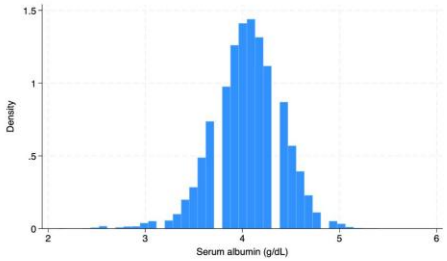

Figure 1A: Histogram demonstrating normal distribution of serum albumin

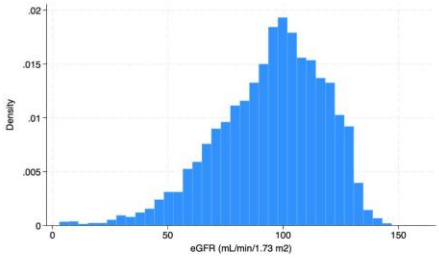

Figure 1B: Histogram demonstrating non-normal distribution of estimated glomerular filtration rate

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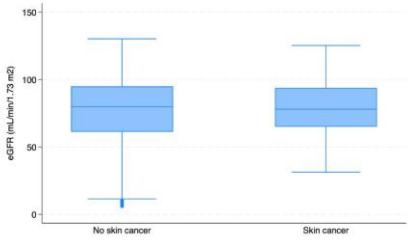

Figure 2A : Distribution of eGFR by Skin Cancer Status

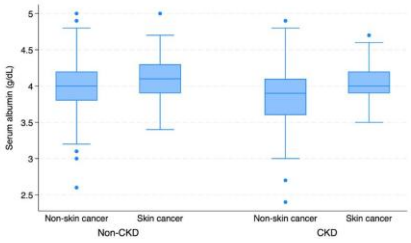

Figure 2B : box graph of Distribution of Serum Albumin by Skin Cancer Status Stratified by CKD