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The impact of obesity on the severity of histopathologic parameters in patients with IgA nephropathy

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Objectives: Several studies reported the effect of obesity on the progression of IgA nephropathy (IgAN). However, the impact of obesity on histopathologic findings in IgAN remains uncertain.

Methods: This retrospective cross-sectional study included 537 patients with biopsy-proven IgAN from eight hospitals between January 2015 and November 2019 in South Korea. Patients were categorized according to the body mass index (BMI) classification of Asia-Pacific obesity classification: underweight (< 18.5 kg/m^2; n = 32), normal weight/overweight (18.5 – 25 kg/m^2; n = 312), and obese (≥ 25 kg/m^2; n = 193). The clinical and histopathologic data at the time of renal biopsy and the treatment after biopsy were analyzed.

Results: Age, and levels of blood pressure, liver enzymes, fasting glucose, uric acid, lipids, serum C3 and C4 and proteinuria were significantly higher, and the estimated glomerular filtrate rate was lower in the obese group compared to the other groups. The mesangial matrix expansion (MME) score, interstitial fibrosis score, tubular atrophy score, and mesangial deposition of C3 and C4 were significantly different between the three groups. Among these histopathologic parameters, BMI was independently positively associated with the MME score in multivariable linear regression analysis (β = 0.090, *P* = 0.035). In multivariate logistic regression analysis, the obese group showed an independent association with higher MME score compared to the normal weight/overweight group (OR = 2.029; 95% CI, 1.103 – 3.729, *P* = 0.023). Interstitial fibrosis, tubular atrophy, and mesangial deposition of C3 and C4 were not independently associated with BMI after adjusting for confounding factors. The obese group was more likely to be treated with anti-hypertensive medications, statins and corticosteroids than other groups after renal biopsy.

Conclusions: Obesity was independently associated with severe MME in patients with IgAN. Obesity may have an important pathogenetic role in the mesangial lesions in IgAN.