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**Inflammation of adipocyte was associated with podocyte injury in obesity related kidney disease.**

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**Objectives:**

Obesity and diabetes mellitus (DM) are leading cause of chronic kidney disease. Hemodynamic alteration such as hyperfiltration might cause podocyte injury and progressive glomerulosclerosis in obesity related kidney disease. In addition, inflammation of adipocyte could aggravate systemic inflammation and renal injury. However, evidences are lacking in human studies.

**Methods:** We prospectively enrolled 39 adult subjects with body mass index (BMI) more than 30kg/m<sup>2</sup> who underwent bariatric surgery from Jan 2019-Feb 2020 in Korea University Anam Hospital. Flow cytometric detection of monocytes was performed in blood, subcutaneous, and visceral fat.

**Results:**

Mean age was 42.8 ± 11.9 years, 69.2% was women, and 53.8% was DM. Mean BMI was 39.0±5.0 kg/m<sup>2</sup>, and estimated glomerular filtration rate (eGFR) was 97.3±18.6 ml/min/1.73<sup>2</sup>. Serum podocalyxin and nephrin were significantly higher in subjects with hyperfiltration (eGFR≥100 ml/min/1.73m<sup>2</sup>) compared than subjects with eGFR<90 ml/min/1.73m<sup>2</sup> (P<0.05). Serum nephrin was correlated with classical monocyte (CD14++ CD16-) in blood (r=0.418, p=0.037) and CD16+36+ monocyte M1 monocyte in visceral fat (r=0.544, p=0.029). Proinflammatory monocyte in blood was associated with renal function in subjects with morbid obesity. Classical monocyte in blood was positively associated with serum BUN (r=0.638, p=0.035) and triglyceride (r=0.411, p=0.041). Intermediate monocyte (CD14++CD16+ monocytes) in blood was negatively associated with eGFR (r=-0.419, p=0.037). Systemic inflammation was associated with proinflammatory monocyte infiltration in visceral and subcutaneous fat. CD16+36+ monocyte M1 monocyte in visceral fat was correlated with white blood cell count in blood (r=0.724, p=0.002). In addition, CD16+36+ monocyte M1 monocyte in subcutaneous fat was associated with serum CRP (r=0.703, p=0.002).

**Conclusions:** Podocyte injury was associated with hyperfiltration and proinflammatory monocyte in blood and visceral fat in subjects with morbid obesity. Proinflammatory monocyte infiltration in visceral and subcutaneous fat was associated with systemic inflammation.