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## Polycythemia in patients born preterm with low birth weight

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**Background:** Low birth weight (LBW) infants have reduced nephrons and are at risk of chronic kidney disease. It is unknown whether preterm birth and/or low birth weight is associated with peritubular capillary (PTC) development.

**Case:** Patient 1 and 2, born at 25 weeks of gestation with birth weight of 466 g and 728 g, showed mild proteinuria at age 6 and 8 years, respectively. In association with increasing proteinuria and blood pressure (BP), polycythemia developed in adolescence. Patient 1 and 2 underwent renal biopsy at age 15 and 18 years, when their BP was 143/59 and 137/82 mmHg, eGFR 90 and 114 ml/min/m<sup>2</sup>, hemoglobin 18.7 and 19.0 g/dL, erythropoietin (EPO) 24.5 and 17.8 U/L, respectively. Polycythemia was considered to be due to increased EPO. Light microscopy showed glomerular hypertrophy, and focal segmental glomerulosclerosis without significant fibrosis. Immunohistochemical staining with CD31 or CD34 antibody revealed PTC rarefaction.

**Clinical study:** Thirty-six patients with a history of extremely LBW were retrospectively analyzed (male 17, female 19; age at analysis 4-19 years; birth weight 316-998 g; gestational age 22-32 weeks). Twelve patients showed hemoglobin levels more than 2 SD above the mean (polycythemia group, male 7, female 5; age at finding 2-16 years). Polycythemia was associated with lower eGFR (73 ml/min/1.73m<sup>2</sup> vs 106 ml/min/1.73m<sup>2</sup>) and smaller birth weight (619 g vs 802 g).

**Conclusions:** Polycythemia can be observed in patients born preterm with extremely low birth weight, and associated with low eGFR.

### Biography

Nariaki Asada graduated from Kyoto University. He researched a new testing on a diaper for urinary tract infection in Pediatrics department of Ota Memorial Hospital. He is currently pursuing PhD in Pediatrics at Keio University School of Medicine. Current research interests are anemia of prematurity and polycythemia in patients born preterm with low birth weight.

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