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## **Risk factors of hypercalcemia after kidney transplantation**

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**Objectives:** Kidney transplantation (KT) is the best choice for patients with end-stage kidney disease (ESKD) because KT improves complications of ESKD and patient's outcomes. However, complications of ESKD after kidney transplantation are not all solved, and one of them is hypercalcemia. The purpose of this study was to identify the risk factors of hypercalcemia after KT.

**Methods:** One thousand eighty kidney transplant recipients was enrolled in multicenter observational cohort study (KNOW-KT) between July 2012 and August 2016. Nineteen patients with parathyroidectomy before KT excluded. Nine hundred forty-eight patients with calcium and albumin level at pretransplant and 1 year after KT were reviewed. Hypercalcemia was defined as albumin-corrected calcium  $\geq 10.2$  mg/dL.

**Results:** Serum corrected calcium level (mg/dL) at pre-transplant and 1 year after KT were  $8.83 \pm 0.88$  and  $9.22 \pm 0.61$ , respectively ( $p < 0.001$ ). Parathyroid hormone (PTH) level (pg/mL) at pre-transplant and 1 year after KT were  $275.2 \pm 268.7$  and  $86.3 \pm 66.5$ , respectively ( $p < 0.001$ ). Percentages of hypercalcemia at pre-transplant and 1 year after KT were 5.5 and 7.0, respectively ( $p < 0.001$ ). However, PTH level (pg/mL) at 1 year after KT between patients with and without hypercalcemia at 1 year after KT showed the significant difference ( $79.7 \pm 73.4$  vs.  $195.1 \pm 125.5$  pg/mL;  $p < 0.001$ ). When divided into four groups using corrected calcium levels at pretransplant and 1 year, PTH levels (pg/mL) at pretransplant were  $353.9 \pm 269.7$  in the persistent hypercalcemia group,  $244.7 \pm 504.9$  in the improved hypercalcemia group, and  $518.5 \pm 350.6$  in the developed hypercalcemia group. PTH levels (pg/mL) at 1 year were  $242.2 \pm 157.4$  in the persistent hypercalcemia group,  $75.2 \pm 52.6$  in the improved hypercalcemia group, and  $176.3 \pm 106.6$  in the developed hypercalcemia group.

**Conclusions:** Hypercalcemia and high parathyroid hormone level at pretransplant were risk factors of hypercalcemia at 1 year after KT.