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정상신기능에서 발생한 고마그네슘에 의한 저칼슘혈증과 고칼륨혈증 1예

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Hypermagnesemia Induced Hypocalcemia and Hyperkalemia in Normal Renal Function: A Case Report

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Hypermagnesemia is an uncommon problem in the absence of renal impairment and iatrogenic administration. When it occurs, the clinical manifestations differ according to the plasma magnesium concentration. There is no symptoms at level of 3.6 mg/dL but nausea, flushing, headache, somnolence, hypocalcemia, hypotension at level of <12 mg/dL and muscle paralysis, respiratory failure at level of >12 mg/dL. Magnesium sulfate is widely used as the primary tocolytic agent. As the recommended therapeutic level for tocolytic effects is 4-8 mg/dL, adverse effects of hypermagnesemia should be monitored. Although hypocalcemia is well known adverse effect, hyperkalemia is a rare finding with hypermagnesemia. It can occur from the blockade of the potassium channels resulting impaired renal excretion of potassium. A 30 year old twin-pregnant female presented with preterm labor and incompetent internal Os of cervix at 27 week gestation. She was normotensive and had normal kidney function. After admission, she received magnesium sulfate to control labor. 6 gram of magnesium sulfate was administrated as loading dose and 0.8-1.2 gram of magnesium was administrated hourly as continuous dose. Plasma calcium level was monitored and calcium gluconate was administrated when hypocalcemia was noted. About 2 weeks later, hyperkalemia was noted and treatment was performed to reduce plasma potassium level. In laboratory examination, potassium was 6.1 mmol/L, magnesium was 5.4 mg/dL, albumin was 2.7 g/dL, calcium was 7.1 mg/dL, PTH level was 123.4 pg/mL (reference range, 15-65 pg/mL), urine potassium was 13.3 mmol/L and TTKG was 2.01. Intravenous magnesium sulfate was switched to atosiban as oxytocin antagonist. She got cesarean section at 29 week gestation due to her vaginal bleeding. From this case, we should keep in mind that hyperkalemia could also occur with hypermagensemia.

Key Words: 고마그네슘혈증, 저칼슘혈증, 고칼륨혈증
Hypermagnesemia, Hypocalcemia, Hyperkalemia