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요로 전환술인 회장도관과 인공방광대치술 시행 후 발생한 대사성 산증의 신기능과의 연관성

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Effect of Renal Function on Acid-base Disorder after Orthotopic Bladder Replacement: Ileal Neobladder Compared with Ileal Conduit

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Introduction: Radical cystectomy with urinary tract reconstruction is a standard treatment for invasive bladder cancer. For many years, orthotopic neobladder urinary diversion has been popular for the cystectomy without a need for a cutaneous stoma and urostomy appliances. Although the neobladder method has improved patients' quality of life, the frequent incidence of metabolic acidosis and electrolyte disturbances such as hypokalemia have been reported. In this study, we analyzed patterns of metabolic acidosis from patients following construction of an ileal neobladder compared to ileal conduit method, and searched for risk factors affecting metabolic acidosis.

Methods: We conducted a retrospective study of 95 patients who underwent radical cystectomy and urinary diversion for invasive bladder cancer from January 2001 to December 2014 at Hallym University Kangnam Sacred Heart Hospita. Patients who have any illness such as severe pulmonary disorder, take any medication that could lead to metabolic acidosis and sepsis, or don't have follow-up data were excluded. Acid-base balance, serum electrolytes, renal function and effects of renal function on acid-base metabolism were compared between ileal neobladder and ileal conduit groups.

Results: Urinary diversions were performed with ileal neobladder for 62 patients and with ileal conduit for 33 patients. No significant differences were observed in their baseline characteristics and preoperative variables examined between the ileal neobladder and ileal conduit groups, except for age (64.5±8.6 vs. 69.5±8.1, p=0.007). Metabolic acidosis was detected in 23 patients (37.1%) with ileal neobladder and in 13 patients (39.4%) with ileal conduit within 7 days after operation. One month after operation, 8 patients (13.8%) with ileal neobladder and 4 patients with ileal conduit showed metabolic acidosis, but differences were not significant. Serum creatinine significantly correlated to pH ($r=-0.43$, $p<0.001$), $PaCO_2$ ($r=-0.44$, $p<0.001$) and base excess ($r=-0.58$, $p<0.001$). In multivariate analysis, 1 mg/dl increase of serum creatinine level showed 5.79-fold higher risk of metabolic acidosis.

Conclusion: Patients with ileal neobladder develop metabolic acidosis similarly with those with ileal conduit. Close association between serum creatinine level and degree of metabolic acidosis was also observed in both groups.

Key Words: 요로 전환술, 인공방광대치술, 대사성산증
Urinary diversion, Ileal neobladder, Metabolic acidosis