Acute renal failure after continuous flow irrigation in patients treated with potassium-titanyl-phosphate laser vaporization of prostate

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Cases of acute renal failure after transurethral resection of the prostate have been reported since the late 1940s. The pathogenic mechanisms postulated were acute hemolysis, renal interstitial edema, ischemic tubular injury, and rhabdomyolysis, resulting from the absorption of irrigating fluid. Because of the excellent hemostasis of the new laser techniques, absorption of irrigation fluid is supposed to be minimal. Potassium-titanyl-phosphate laser vaporization is regarded as the most recent advance in the treatment of patients with benign prostate hyperplasia, with excellent hemostatic properties. We report 3 cases of acute renal failure after continuous flow irrigation in patients treated with potassium-titanyl-phosphate laser vaporization. Renal failure occurred on postoperative day 1, all patients became oligoanuric, 2 patients required hemodialysis therapy, and incomplete recovery of renal function was seen within 1 month. Biopsy findings were similar in all patients, consisting of widening of tubular lumens; partly containing Tamm-Horsfall protein casts, but neither hemoglobin nor myoglobin casts; flattened tubular epithelial cells with loss of brush borders; and variably edematous interstitium. During laser vaporization, irrigation pressure usually is higher than the physiological intravesical pressure and ranges from 60 to 100 mm Hg. High intravesical pressure may facilitate not only irrigating fluid absorption, but also transient urinary stasis or even vesicoureteral reflux. The latter may directly damage tubular epithelial cells and cause acute renal failure. Thus, intravesical pressure should be kept as low as possible, even during laser prostatectomy.
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