Transurethral Cauterization Using Neodymium YAG Laser for Hemorrhagic Radiation Cystisis Caused By Adjuvant/Salvage Radiotherapy After Radical Prostatectomy

Introduction and Objective: Hemorrhagic radiation cystitis is a severe adverse event of adjuvant/salvage external beam radiation therapy (EBRT) after radical prostatectomy (RP). Hemorrhagic radiation cystitis often causes severe anemia and bladder tamponade and disturbs the QOL of patients. Conventional transurethral cauterization by rigid cystoscope is not useful because location of hemorrhage is generally around bladder neck. In addition, cauterization using holmium YAG laser has possibility of injury of urethral sphincter because the laser reaches deep and urethral sphincter is located closely to bladder neck after RP. Although hyperbaric oxygen is another option, institutions having the facility are limited. In the present study, we investigated the efficiency of transurethral cauterization by flexible cystoscope and neodymium YAG laser (Nd:YAG) for hemorrhagic radiation cystitis by EBRT after RP. Nd:YAG laser selectively cauterizes only abnormal blood vessels on the surface by reacting to hemoglobin.
Materials and Methods: Five patients with severe hemorrhagic radiation cystitis after adjuvant/salvage EBRT were treated by Nd:YAG laser cauterization. Patients' age ranged from 58 to 72 years old. Average duration between RP to hemorrhagic radiation cystitis was 3 years after EBRT. No patients had biochemical recurrence after ERBT. Flexible cystoscope was used for the treatment. Cauterization of hemorrhagic blood vessels with Nd:YAG laser was performed under spinal anesthesia. The power of Nd:YAG laser was set at < 20W and the pulse duration was < 3s.
Results: Mean operative time was 34 minutes. The follow-up durations were 11 to 18 months. Hemorrhages were observed around the bladder neck in all patients. Bladder hemorrhage was successfully cauterized by Nd:YAG without any severe adverse events in 4 patients. Only one patient had recurrence with mild hemorrhage and required the 2nd cauterization by Nd:YAG laser. Two patients had temporally mild incontinence within 2 weeks after transurethral cauterization.
Conclusion: The Nd:YAG laser is simple, easy and cost-effective option for treatment of hemorrhagic radiation cystitis caused by EBRT after RP.