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Urologic Oncology: Seminars and Original Investigations 34 (2016) 58.e19–58.e27

UROLOGIC ONCOLOGY

Original article

There is a place for radical cystectomy and urinary diversion, including orthotopic bladder substitution, in patients aged 75 and older: Results of a retrospective observational analysis from a high-volume center

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Received 29 May 2015; received in revised form 20 July 2015; accepted 21 August 2015

Abstract

Introduction: The incidence of cancer increases with age and owing to the changing demographics we are increasingly confronted with treating bladder cancer in old patients. We report our results in patients >75 years of age who underwent open radical cystectomy (RC) and urinary diversion.

Material and methods: From January 2000 to March 2013, a consecutive series of 224 old patients with complete follow-up who underwent RC and urinary diversion (ileal orthotopic bladder substitute [OBS], ileal conduit [IC], and ureterocutaneostomy [UCST]) were included in this retrospective single-center study. End points were the 90-day complication rates (Clavien-Dindo classification), 90-day mortality rates, overall and cancer-specific survival rates, and continence rates (OBS).

Results: Median age was 79.2 years (range: 75.1–91.6); 35 of the 224 patients (17%) received an OBS, 178 of the 224 patients (78%) an IC, and 11 of the 224 patients (5%) an UCST. The 90-day complication rate was 54.3% in the OBS (major: Clavien grade 3–5: 22.9%, minor: Clavien Grade 1–2: 31.4%), 56.7% in the IC (major: 27%, minor: 29.8%), and 63.6% in the UCST group (major: 36.4%, minor: 27.3%); $P = 0.001$. The 90-day mortality was 0% in the OBS group, 13% in the IC group, and 10% in the UCST group ($P = 0.077$). The Glasgow prognostic score was an independent predictor of all survival parameters assessed, including 90-day mortality. Median follow-up was 22 months. Overall and cancer-specific survivals were 90 and 98, 47 and 91, and 11 and 12 months for OBS, IC, and UCST, respectively. In OBS patients, daytime continence was considered as dry in 66% and humid in 20% of patients. Nighttime continence was dry in 46% and humid 26% of patients.

Conclusion: With careful patient selection, oncological and functional outcome after RC can be good in old patients. Old age as the sole criterion should not preclude the indication for RC or the option of OBS. In old patients undergoing OBS, satisfactory continence results can be achieved.

Keywords: Functional outcome; Complications; Cystectomy; Urinary diversion; Elderly

1. Introduction

In industrialized countries the average life expectancy has continuously increased during the last decades and this trend is expected to continue. In Switzerland, a sexagenarian now has a 50% chance, if male, and 70% if female, of reaching the age of 80. By 2050, the population of more than 80 years old people would have multiplied 2.7 times in Switzerland. Age is considered to be the greatest single risk factor for developing cancer. It is widely accepted that by 2030 70% of cancers would occur in more than 65 years old people in the US, most likely due to prolonged exposure to carcinogens (i.e., smoking) and accumulation of cellular and genetic damages [1].

Bladder cancer is no exception and typically affects old patients with a median age at the time of diagnosis of approximately 70 years; 32% of patients diagnosed with bladder cancer in the US are between 75 and 84 years of age [2]. Surgery and the perioperative period can be

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http://dx.doi.org/10.1016/j.urolonc.2015.08.011
1078-1439/

challenging in old patients owing to the presence of comorbidities and age-related physiological changes. In these patients, treatment goals should focus on maintaining a good quality of life for the remaining time span by achieving long-term remission combined with excellent functional results. Radical cystectomy (RC), extended pelvic lymph node dissection (PLND), and urinary diversion (UD) remain the standard of care for patients with muscle-invasive bladder cancer (MIBC) [3]. However, this type of surgery is per se associated with an incidence of postoperative complications of up to 60% and a 90-day mortality of approximately 5% to 15% and physicians tend to shy away from this form of treatment in the patients aged 75 years and older [4,5].

Although there are publications showing that RC with UD is "feasible" in old patients with acceptable morbidity and mortality [6,7], the literature is scarce concerning functional and oncological outcome of orthotopic bladder substitution (OBS) [8]. We report our results in old patients who underwent open RC, PLND, and UD in a high-volume center with a focus on outcome, including functional results in patients receiving an OBS.

2. Material and methods

2.1. Patients

The Institutional Review Board (Registration no. 04-12-13) approved the retrospective review of the medical records of a consecutive series of 244 old patients (age >75 y) who underwent RC and UD (OBS, ileal conduit [IC] and ureterocutaneostomy [UCST]) at our institution between January 2000 and March 2013. All patient data were evaluated retrospectively from a prospectively maintained database. Patients with insufficient follow-up were excluded from analysis, leaving 224 for the study.

Variables examined in this retrospective single-center study were age, sex, American Society of Anesthesiologists (ASA) physical status classification system, P-POSSUM score, Charlson comorbidity index age-adjusted (CCIaa) score, Glasgow prognostic score (GPS), preoperative anemia, preoperative renal insufficiency, coronary disease, diabetes mellitus, neoadjuvant radiotherapy/chemotherapy, postoperative tumor, and lymph node stage (pT and pN).

2.2. Preoperative management, surgical technique, and postoperative management

Patients received no oral bowel preparation, but 2 high enema the evening before surgery. Perioperative antibiotic therapy consisted of obramycin and metronidazole for 2 days and amoxicillin/clavulanic acid until removal of all stents and catheters. Low-molecular-weight heparin was started on the evening before surgery and maintained throughout hospitalization. PLND, open RC, and UD were performed according to institutional standards. Postoperatively, patients were transferred to the intermediate care unit for 3 to 5 days according to our institutional protocol [9].

2.3. Patients follow-up

Follow-up data were prospectively entered into the departmental database. Follow-up was scheduled at 3 months, then at 6 monthly intervals for the first 5 years and thereafter yearly [10]. Basic follow-up visits consisted of a physical examination, blood tests, urine culture, residual urine measurement, and renal ultrasonography. In patients with a $\geq$pT3 tumor stage, abdominal/pelvic computer tomography and bone scintigraphy were performed after 6, 12, and 18 months. A standardized questionnaire concerning voiding, daytime and nighttime continence, and pad use was completed in patients with an OBS [11,12]. Continence was defined as complete dryness or the loss of no more than a few drops of urine once or twice a month with some patients wearing a pad as a safety measure [12].

2.4. Outcome measurements

Clinical outcomes evaluated were the 90-day postoperative complication rate, the 90-day mortality, and the overall survival (OS) and cancer-specific survival (CSS). All complications were recorded, defined, and graded according to the 5-grade modification of the original Clavien system and to the Memorial Sloan-Kettering Cancer Center complication grading system [4,13]. Major complications were defined as grade 3 to 5 and minor as grade 1 and 2.

CSS was calculated as time from RC to date of death from progressive bladder cancer; OS was calculated as time from RC to date of death from any cause. Patients alive without recurrence were censored at the date of last follow-up; patients dying without recurrence were censored at the time of death.

Functional end points were daytime and nighttime continence 12 months postoperatively in patients receiving an OBS.

2.5. Statistics

This was an exploratory study and therefore no power analysis was performed to determine sample size. Data were analyzed using nonparametric statistical models. Categorical data were compared with results from the Fisher exact test or chi square test. Continuous data were compared using the Kruskal-Wallis test. Multiple logistic regression analyses using a forward selection procedure were applied to identify independent risk factors for postoperative complication and day-/nighttime continence rates and reported as adjusted odds ratios (ORs) with 95% CIs. Potential confounders included were sex, body mass index (20–25 vs. <20 or >25), ASA scores, CCIaa, GPS, P-POSSUM score (continuous), preoperative anemia, and