Predictors of Histological Subtype of Benign Lesions at Lapraroscopic Partial Nephrectomy: Japanese Multi-Institutional Study Including 1,375 Patients

Introduction and Objective: The increased use of cross-sectional abdominal imaging over the last two decades has caused a rise in the number of small renal masses discovered incidentally. To determine what patient and tumor characteristics predict benign tumor pathology and develop a comprehensive nomogram to quantitate the likelihood of histological subtype.

Materials and Methods: A nation-wide survey was performed in Japan by the LPN study group under the support of Japanese Society of Endourology. A survey form was sent to all of the 473 urologists certified by Endoscopic surgical skill qualification system in urological laparoscopy. Of the 228 institutes, 63 (28%) institutes had more than 10 LPN experience. After IRB approval, we reviewed 1,375 patients retrospectively who underwent LPN between Dec 1998 and Dec 2008.

Results: Patient charcteristics: median age 60 yrs (IQR 51-69), male/female 975/398, median tumor size was 2.26 cm (IQR 1.6–2.7), malignant/benign 1,193/182. Pathological subtype: angiomyolipoma (AML) 109 (7.9%)/oncocytoma 30 (2.2%)/other benign tumor 43 (0.9%)/Clear cell 1,049 (76.3%)/papillary 95 (6.9%)/chromophobe 36 (2.6%)/unclassified 13 (0.9%). A multivariate model revealed that female gender, younger age, smaller tumor size, high ASA score (3-5 vs 1,2) and low BMI are all independently predictive of benign lesion. Nomograms to predict total benign lesions, AML and oncocytoma were developed based on a multivariate logistic regression model. The area under the ROC curve for total benign lesions/ AML/ oncocytoma were 0.706/ 0.764/ 0.700, respectively.

Conclusions: We developed a nomogram that can predict the histological subtype of benign renal tumor. This nomogram provides important implications for physicians and patients in clinical decision making regarding treatment options or follow-up strategy.