we built this CAD system and we validated its reliability, we decided to test 10 patients with a biopsy confirmed PCa. All of them underwent MRI performing a conventional study with T1-w, T2-w and diffusion sequences. After precontrast acquisitions, patients were intravenously given gadobutrol and a total of 28 phases were acquired, each lasting 13 seconds. All images were examined by an expert radiologist on the basis of histological information provided after surgery and a total of 13 tumours, all located in the peripheral zone (PZ), were detected. A ROI was drawn around each lesion, on all possible slices to cover the whole tumour extension. When possible a ROI on a healthy region, with dimension comparable to that of the corresponding malignant ROI was also drawn for each patient. Information of pixels belonging to the same ROI were extracted from both T2-w sequence and the 28DCE volume acquisitions, to construct time-intensity curves over time. A filtering operation was performed to reduce noise contribution and signal to noise ratio was estimated to discard low quality data. T2-w images were used to evaluate mean grey value of pixels on selected ROIs, while DCE-MRI points were analyzed applying three different quantitative models (Tofts, Weibull, EU1) and a semiquantitative description (peak location and maximum enhancement, initial slope, curve wash-out, area under the curve). A total of 13 features were collected for each pixel. The initial features set was reduced in order to avoid over-fitting problems and to discard redundant information. Furthermore when a couple of highly correlated features occurred, the parameter of the couple with lower performances rate was discarded. On the basis of these elaboration steps a 6-dimensional vector was generated for all the pixels in which model fitting was successful. Malignancy probabilities were then calculated with the Bayes rule. *Results:* The resulting area under the receiver operating characteristic (ROC) curve was 0.874; sensitivity and specificity were 84.6% and 83.4% respectively. Good separation between malignant and benign points can be observed for the three combination of parameters shown on the Scatter plots of the three quantitative models implemented. *Conclusion:* The CAD scheme presented in this study shows good performance in discriminating between benign and malignant regions in the prostate. This system achieves a high sensitivity and specificity, leading to a better lesion detection rate. Future developments will focus on integrating the dataset with information from diffusion, in order to further improve system performances.

171
SIMPLE ENUCLEATION VERSUS RADICAL NEPHRECTOMY IN THE TREATMENT OF pT1a AND pT1b RENAL CELL CARCINOMA

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Introduction and Objectives: Simple enucleation (TE) showed excellent oncological results in large retrospective series. No study has compared oncologic outcomes after TE and radical nephrectomy (RN) for the treatment of pT1 RCC. The aim of the present study is to compare the oncologic outcomes after TE and RN in pT1 RCCs. *Patients and Methods:* We retrospectively analyzed 475 patients who underwent TE or RN for pT1 RCC, N0, M0 between 1995 and 2007. TE was done in 332 patients, while RN in 143. Local recurrence, progression-free survival (PFS) and cancer-specific survival (CSS) were the main outcomes of this study. The Kaplan-Meier method was used to calculate survival functions, and differences were assessed with log-rank statistics. Univariate and multivariate Cox regression models were also used. *Results:* The surgical margin status of tumors that had TE was always negative. The mean follow-up was 72±44 mo after RN and 58±38 mo after TE (p=0.0004). At last follow-up, 393 patients (82.7%) were alive and disease free and 56 (11.8%) had died of other causes. Overall, 26 patients experienced progressive disease (5.4%) and of those 5 were alive but with disease progression (1%) and 21 (4.4%) had died of metastatic disease. No local recurrences were observed in the patients who underwent RN. Overall, 3 patients with pT1a RCC developed isolated renal recurrence after TE and this was always elsewhere in the kidney. Specifically, all patients diagnosed having local recurrences had negative surgical margins. The 5- and 10-yr PFS estimates were 91.3% and 88.7% after RN and 95.3 and 92.8% after TE (p=NS). The 5- and 10-yr CSS estimates were 92.1% and 89.4% after RN and 94.4% (5- and 10-yr CSS) after TE (p=NS). No statistically significant differences between RN and TE were found after adjusting CSS probabilities according to age at surgery (≤65 yr, log-rank p-value: 0.99; or >65 yr, log-rank p-value: 0.14), grade (Fuhrman nuclear grades 1-2, log-rank p-value: 0.48; grade 3, log-rank p-value: 0.89; or grade 4, log-rank p-value: 0.62), stage (pT1a, log-rank p value: 0.46; or pT1b, log-rank p-value: 0.44) or clear cell subtype (log-rank p-value: 0.37). Surgical treatment failed to be a predictor of PFS or CSS both at univariable and multivariable analyses. The potential limitation of the present study includes that the data originate from a retrospective review. *Conclusion:* TE can achieve oncologic results similar to those of RN for the treatment of pT1 RCCs provided tumors are carefully selected based on their safe and complete removal.