USE OF RENAL SCORING SYSTEMS IN NEPHRON SPARING SURGERY: APPLICABILITY AND REPRODUCIBILITY FROM RESIDENTS PERSPECTIVE

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INTRODUCTION

The incidence of small renal masses has steadily increased in the last decade. Advances both in imaging and surgical techniques led to a shift from radical treatment to a conservative one with expanding indications for nephron sparing surgery (NSS). In this setting preoperative imaging studies are of paramount importance in treatment decision making and in assisting physicians to determine the best surgical approach. Several scoring systems (SS) have been developed to stratify patients and to help in predicting surgical complexity and potential post-surgical outcomes in NSS. However, there is not a reference standard and the variety of different SS, which are not interchangeable one to another, could be misleading when reporting preoperative assessment between different institutions. To date, it is not known how these SS vary between readers with different backgrounds and levels of expertise.

AIM OF THE WORK

The aim of this study is to evaluate the applicability of four different nephrometry scoring systems in a real life scenario, and to analyze their reproducibility by comparing the scores assigned by radiology and urology residents.

MATHERIALS AND METHODS

36 patients with a suspected diagnosis of renal tumor. All patients were candidate to nephron sparing surgery with a laparoscopic or open approach. All diagnostic Computed Tomography (CT) scans were retrospectively evaluated. Images were consulted both in the axial and coronal planes. Six residents in total, three urologists and three radiologist, analyzed diagnostic CT scans and assigned independently the nephrometry scores.
We included the R.E.N.A.L. , the P.A.D.U.A., the C–Index and the ABC scoring systems.

RESULTS

Figure 1 – Box plot
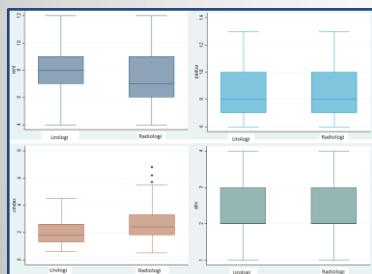
ICC was higher for the RENAL and PADUA scores while was low for the C-Index and ABC score. All Urologist SS where characterized by an intra-class correlation index higher than 0.8, while in the Radiologist group only the Renal and the PADUA presented similar results. The C-Index and ABC scores had lower ICC (table 1). The differences in score assigned between the two groups of specialists resulted respectively in 1 point and 0.6 point mean for the RENAL score (p=0.012) and the C-Index (p<0.001) while no mean differences were observed in PADUA and ABC scores (p>0.05) (table 2).

Table 1 – Intraclass correlation and Cohen's Kappa (95% confidence interval) amongsts readers

	R. E. N. A. L. ICC (95% CI)	PADUA ICC (95% CI)	C-Index ICC (95% CI)	ABC Kappa (95% CI)
All readers	0.80 (0.45 – 0.78)	0.82 (0.74 – 0.90)	0.40 (0.24 - 0.55)	0.52 (0.42 – 0.62)
Urologists only	0.91 (0.86 – 0.96)	0.86 (0.78 – 0.93)	0.81 (0.71 - 0.90)	0.81 (0.71 – 0.91)
Radiologists only	0.80 (0.70 – 0.90)	0.83 (0.74 – 0.91)	0.46 (0.26 - 0.66)	0.32 (0.21 – 0.43)

Table 2 – Median and Interquartile Range (IQR): comparison between urologists and radiologists

	R. E. N. A. L. Median (IQR)	PADUA Median (IQR)	C-Index Median (IQR)	ABC Median (IQR)
Urologists	8 (7 – 9)	8 (7 – 10)	1.8 (1.3 – 2.6)	2 (2 – 3s)
Radiologists	7 (6 – 9)	8 (7 – 10)	2.4 (1.8 – 3.3)	2 (2 – 3s)
P-value (Mann-Withney test)	0.012	0.560	< 0.001	0.612

CONCLUSIONS

Our results suggest that SS based on anatomical characteristics tend to show a higher reproducibility even among residents with different professional backgrounds. Finally, considering that R.E.N.A.L. and P.A.D.U.A. scores showed the best accordance between groups, these SS should be adopted and incorporate also in the preoperative imaging report from radiologists

References

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