

Table S1. Search strategy focusing on MRI-characteristics of RCC.

PubMed
"adenocarcinoma of kidney"[Title/Abstract] OR "adenocarcinoma of the kidney"[Title/Abstract] OR "Grawitz"[Title/Abstract] OR "collecting duct carcinoma"[Title/Abstract] OR "hypernephroma"[Title/Abstract] OR "renal cell carcinoma"[Title/Abstract] OR "carcinoma, renal cell"[MeSH Terms] OR (("carcinoma"[Title/Abstract] OR "adenocarcinoma"[Title/Abstract] OR "cancer"[Title/Abstract]) AND ("Renal"[Title/Abstract] OR "renal cell"[Title/Abstract] OR "nephrotic"[Title/Abstract] OR "nephroid"[Title/Abstract] OR "hypernephro"[Title/Abstract]))
AND
"magnetic resonance imaging"[Title/Abstract] OR "MRI"[Title/Abstract] OR "MRIs"[Title/Abstract] OR "fMRI"[Title/Abstract] OR "fMRIs"[Title/Abstract] OR "nmr imaging"[Title/Abstract] OR "mr tomograph"[Title/Abstract] OR "mr imaging"[Title/Abstract] OR "nmr tomograph"[Title/Abstract] OR "zeugmatograph"[Title/Abstract] OR "chemical shift imaging"[Title/Abstract] OR "proton spin tomograph"[Title/Abstract] OR "magnetization transfer contrast imaging"[Title/Abstract] OR "spin echo imaging"[Title/Abstract] OR "Magnetic Resonance Imaging"[MeSH Terms] OR "cross sectional imaging"[Title/Abstract]
Embase/Medline
'adenocarcinoma of kidney':ti,ab,kw OR 'adenocarcinoma of the kidney':ti,ab,kw OR Grawitz:ti,ab,kw OR 'collecting duct carcinoma':ti,ab,kw OR hypernephroma*:ti,ab,kw OR 'renal cell carcinoma':ti,ab,kw OR 'renal cell carcinoma'/exp OR ((carcinoma*":ti,ab,kw OR adenocarcinoma*:ti,ab,kw OR cancer*:ti,ab,kw) AND (renal:ti,ab,kw OR 'renal cell':ti,ab,kw OR nephrotic:ti,ab,kw OR nephroid:ti,ab,kw OR hypernephro*:ti,ab,kw))
AND
'magnetic resonance imaging*':ti,ab,kw OR 'MRI':ti,ab,kw OR 'MRIs':ti,ab,kw OR 'fMRI':ti,ab,kw OR 'fMRIs':ti,ab,kw OR 'nmr imaging*':ti,ab,kw OR 'mr tomograph*':ti,ab,kw OR 'mr imaging*':ti,ab,kw OR 'nmr tomograph*':ti,ab,kw OR zeugmatograph*:ti,ab,kw OR 'chemical shift imaging*':ti,ab,kw OR 'proton spin tomograph*':ti,ab,kw OR 'magnetization transfer contrast imaging*':ti,ab,kw OR 'spin echo imaging*':ti,ab,kw OR 'nuclear magnetic resonance imaging'/exp OR 'cross sectional imaging*':ti,ab,kw
Cochrane
"adenocarcinoma of kidney*":ti,ab,kw OR "adenocarcinoma of the kidney":ti,ab,kw OR Grawitz:ti,ab,kw OR "collecting duct carcinoma*":ti,ab,kw OR hypernephroma*:ti,ab,kw OR "renal cell carcinoma*":ti,ab,kw OR ((carcinoma*:ti,ab,kw OR adenocarcinoma*:ti,ab,kw OR cancer*:ti,ab,kw) AND (renal:ti,ab,kw OR "renal cell":ti,ab,kw OR nephrotic:ti,ab,kw OR nephroid:ti,ab,kw OR hypernephro*:ti,ab,kw))
AND
"magnetic resonance imaging*":ti,ab,kw OR "MRI":ti,ab,kw OR "MRIs":ti,ab,kw OR "fMRI":ti,ab,kw OR "fMRIs":ti,ab,kw OR "nmr imaging*":ti,ab,kw OR "mr tomograph*":ti,ab,kw OR "mr imaging*":ti,ab,kw OR "nmr tomograph*":ti,ab,kw OR zeugmatograph*:ti,ab,kw OR "chemical shift imaging*":ti,ab,kw OR "proton spin tomograph*":ti,ab,kw OR "magnetization transfer contrast imaging*":ti,ab,kw OR "spin echo imaging*":ti,ab,kw OR "cross sectional imaging*":ti,ab,kw

Table S2. Observed percentage agreement for dichotomous and categorical characteristics in the case report form for the two observers.

Characteristic	Answer options	Observed percent agreement (%)
<i>General tumor characteristics</i>		
Location lesion	<i>indistinguishable / central / peripheral</i>	66.7
Regional LNs	<i>yes / no</i>	100
Shape	<i>lobulated/round / irregular</i>	83.3
Margins	<i>well-defined / ill-defined</i>	66.7
Pseudo(capsule)	<i>yes / no</i>	66.7
<i>Growth pattern</i>		
Capsule rupture/Capsule invasion	<i>yes / no</i>	50
Infiltrative growth pattern	<i>yes / no</i>	83.3
Venous invasion/Tumor thrombus	<i>yes / no</i>	100
<i>MRI characteristics of solid components of the tumor</i>		
T2W pattern	<i>heterogeneous / homogeneous / other</i>	100
T2W intensity	<i>hyperintense / hypointense / isointense</i>	66.7
T1W pattern	<i>heterogeneous / homogeneous / other</i>	100
T2W pattern	<i>hyperintense / hypointense / isointense</i>	33.3
Degree of enhancement	<i>poor / mild / strong</i>	66.7
Enhancement pattern	<i>homogeneous/peripheral to central progressive/band-like areas of late or non-enhancement / heterogeneous / other</i>	100
Hemorrhage	<i>yes / no</i>	83.3
Necrosis	<i>yes / no</i>	100
Cysts	<i>yes / no</i>	83.3
Septation	<i>yes / no</i>	66.7
Fatty tissue	<i>yes / no</i>	100
Subcapsular fluid	<i>yes / no</i>	83.3
Increased vascularity	<i>yes / no</i>	66.7

T2W = T2-weighted; T1W = T1-weighted.

Table S3. Median surface of ROI and median ADC-values per patient for the two observers.

Patient nr.	Observer	Diffusion restriction	Number of ROIs	Median surface (cm ² , range)	Median ADC-value (*10 ⁻³ mm ² /s, range)
1	1	Yes	2	4.29 (3.99-4.59)	1.20 (1.10-1.30)
	2	Yes	4	2.11 (1.2-2.98)	1.33 (1.13-1.37)
2	1	Yes	2	0.45 (0.32-0.57)	1.05 (0.90-1.20)
	2	Yes	2	0.28 (0.22-0.33)	0.94 (0.76-1.11)
3	1	Yes	2	2.66 (2.51-2.81)	0.98 (0.96-1.00)
	2	Yes	3	1.32 (1.03-1.58)	1.00 (0.99-1.01)
4	1	Yes	3	9.06 (6.55-24.83)	1.20 (1.20-1.20)
	2	Yes	4	12.70 (12.00-14.10)	1.14 (1.12-1.18)
5	1	Yes	2	18.14 (9.68-26.59)	0.70 (0.70-0.70)
	2	Yes	4	19.40 (2.7-21.6)	0.69 (0.67-0.70)
6	1	Yes	4	2.61 (2.35-3.67)	0.80 (0.80-0.90)
	2	Yes	4	1.68 (0.96-2.70)	0.80 (0.76-0.84)

ROI = region of interest; ADC = apparent diffusion coefficient.