72 Kidney tumour cryoablation: Oncological outcome and kidney function preservation

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Introduction & Objectives: Cryoablation (CryoA) is well established methods for treating kidney tumours up to 4 cm (T1a) for elderly patients and/or patients with comorbidities who are not suitable for surgery. Ablation is a nephron sparing method as it only slightly reduces the number of nephrons and does not require intraoperative ischemia as kidney resection does. Cryoablation does not induce scarring what is important issue while treating central tumours and it has this advantage to thermal ablation. Cryoablation of malignant tumours in Lithuania is performed at National Cancer Institute (NCI) from 2012 for inoperable tumours.

Materials & Methods: 15 patients (8 patients with solitary kidney), age range 28-83, with inoperable or multiple tumours in kidney were treated using argon helium cryoablation system at NCI from 2012 to 2018. All ablations were performed under CT guidance.

Results:

Table 1 - Single kidney tumour cryoablation*

Patient, N	Age, y	CCI, score	Tumour size, mm	Cryo cycles, N	Duration, min	Hospital stay, day	Pre-CryoA eGFR, ml/min	Post-CryoA eGfr, ml/min	Follow up, mo
1	63	10	37x42	4	240	5	69	54	37
2	28	10	20x23	4	135	1	85	82	58 (recurrence)
3 (mts)	77	3	22x25	3	140	4	78	57	61 (recurrence)
4	50	4	14x19	3	180	2	59	64	41
5	75	9	25x30	2	215	21 (UTI, stent)	43	39	7 (mts sacrum)
6	66	8	19x23, 8x8	2	210	5	63	56	31
7	62	2 (after PN)	21x22	2	250	6 (pyeloperfusion)	70	68	60

8	45	8	18x20	4	280	4	71	57	24
9	72	9	22x17	3	160	3	46	44	10

Table 2 - Kidney tumour cryoablation with controlateral kidney*

Patient, N	Age, y	CCI, score	Tumour size, mm	Cryo cycles, N	Duration, min	Hospital stay, day	Pre-CryoA eGFR, ml/min	Post-CryoA eGfr, ml/min	Follow up, mo
1	75	14	25x23	2	109	4	66	69	56
2	48	6	19x23	2	140	5	96	74	89 (recurrence)
3 (two kidney's cancers)	83	14	34x31	6	225	5	51	54	17 (remains controlateral kidney cancer)
4	80	9	20x24	6	205 (arrhythmia)	5	66	68	86
5	20	3	19x20; 3x3	2	140	3	132	117	19
6	74	10	32x35	2	135	6	14	21	46

*CCI - Charlson comorbidity index; Pre-CryoA eGFR - before cryoablation estimated glomerular filtration rate; Post-CryoA eGFR - after cryoablation estimated glomerular filtration rate; PN - partial nephrectomy; UTI - urinary tract infection.

- Complete ablation was achieved in 14 out of 15 (93,3 %) patients after CryoA.
- The patient comorbidity status did not change in any of the patients.
- No severe complications occurred during the CryoA, only one patient had UTI, another – arrhythmia.
- After the CryoA no significant reduction of renal function was observed.

Conclusions: Cryoablation is a safe and effective treatment option for patients who suffer from inoperable kidney tumours till 4 cm (T1a) or with single kidney tumours. The complication rate is low and excellent tumour control can be achieved without deterioration of the residual renal function in the elderly and/or comorbid patients.