

Image Guided Irreversible Electroporation (IRE) Of Renal Tumours

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Purpose

This aims to present our early experience of CT-guided IRE of renal tumours at a university institution in the United Kingdom.

Materials and Methods

CT-guided IRE under general anaesthesia was performed on 18 renal tumours in 17 patients from 2015 to 2017, with no contraindications for IRE e.g. epilepsy, atrial fibrillation and cardiac pacemaker. Prospective documentation of the patient's demographic, renal function, treatment details and outcomes were reviewed.

Results

Eighteen renal tumours with a mean size of 2.7cm in 17 patients were treated. The mean patient's age was 67.1 years (age range 48.8 to 81.2 years). The primary technical success rate with CT guided IRE was 78%. Four renal tumours had residual disease requiring repeated treatment with CT-guided cryoablation yielding overall successful treatment outcome of 94%. The pre- and post-IRE eGFR were 63.9 +/- SD 18.2 ml/min/1.73m² vs. 59.4 +/- SD 17.9 ml/min/1.73m² with no significant eGFR change (p=0.46). There is no major complication within the series. There was one minor complication related to contrast extravasation from the pelvi-calyceal system due to the IRE electrode traversing the collecting system during treatment and this was treated with conservative management. One patient died at 4 months post-IRE due to underlying progression of lymphoma. At our early-term follow up, we have no local disease progression or distant metastasis.

Conclusions

CT-guided IRE of renal tumours is safe, offers preservation of renal function for central renal tumour sited close to the renal vessels and also offers a safe treatment for tumours in close relationship with other vital structures such as colon and ureter without the need for hydro-/pneumo-dissection. The early treatment outcome is acceptable at this stage of the experience. Overall, our early experience suggests CT-guided IRE has a promising role in the treatment of renal cancers that are sited close to vital structures.