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Commentary

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Commentary: partial nephrectomy for the management of small renal masses

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Introduction

Renal cancer accounts for approximately 4% of all malignancies in the USA.[1] The prevalence of renal cancer has been increasing during the last decades, a fact that is mainly attributed to the abundant use of imaging modalities, mainly CT and MRI.[2] In 2011 six out of ten renal tumours were diagnosed during the work up of unrelated conditions and were considered incidental findings.[3] It is a recognized fact that this rise in the incidence of renal cancer is largely attributed to the incidental diagnoses of small renal masses. Small renal masses (SRM) are generally defined as contrast-enhancing masses within the kidney with a maximal dimension of 4cm (clinical stage T1a renal tumours).[4] According to recent studies, SRMs currently constitute 48-66% of renal tumours.[5]

Small renal masses and malignancy

It is estimated that approximately 20% of SRMs are benign. The majority (55-60%) of those considered "malignant" exhibit a rather indolent clinical behaviour and only about 20-25% demonstrate an aggressive clinical course. The risk of malignancy is related to the diameter of a tumour. It has been shown that 46% of tumours smaller than 1cm in diameter are benign and only 2.3% of them are high grade.[6] It has also been estimated that an increase of 1cm in diameter correlates with a 16% increase in the risk of malignancy.[7]

The morbidity of radical nephrectomy

Recently there has been significant controversy regarding the indications for radical nephrectomy in the management of T1 stage renal tumours, especially SRMs. The low possibility of malignancy and the relative indolent behaviour of the majority of SRMs makes radical nephrectomy a very aggressive treatment option even more so considering that partial nephrectomy provides equivalent oncological efficacy.[8] There is a known association between CKD and cardiovascular morbidity (CAD, MI, peripheral arterial disease), hospitalization and death.[9] Studies have shown that radical nephrectomy is associated with a 22% risk of developing CKD at 10years of follow up (defined as eGFR<60ml/min/1.73m^2 and/or creatinine>2mg/dl) compared to a 12% risk of CKD for partial nephrectomy.[10,11] Huang et al showed that the possibility of maintaining a normal renal function (GFR>60ml/min/1.73m^2) at 10years of follow up is 80% for partial nephrectomy compared to only 35% for radical nephrectomy.[12] Chang et al.,[13] used the analytical Markov model of a 65-year old patient with a unilateral small renal tumor and normal renal function in order to predict the long-term outcomes of partial versus radical nephrectomy. The study showed that partial nephrectomy is more cost-effective and provides better quality of life compared to radical nephrectomy for patients with SRMs mainly due to the lower risk of CKD. The issue of mortality following radical nephrectomy for SRMs was addressed in a study using data from the SEER database. 4.216 patients with renal tumors smaller than 2cm were subjected to either partial nephrectomy (PN) or radical nephrectomy (RN) and followed for 10years. The study revealed an exponential increase in the utilization of PN, from 27% in 1998 to 66% in 2007. The study findings corroborated that RN is associated with a worst overall survival and an increased cardiovascular morbidity compared to partial nephrectomy for renal masses smaller than 2cm.[14] Current guidelines state that partial nephrectomy is an absolute indication in cases of a localized renal tumour in a patient for whom radical nephrectomy would necessitate renal dialysis.[15,16] This clinical scenario applies not only to cases of bilateral renal tumours but also to those of a unilateral renal tumour in the presence of a contralateral anatomically or functionally compromised kidney. A recent review article, considered a total of 27 publications from 1995 to 2010, relevant to PN and RN for renal masses. The authors' intention was to look into survival rates, overall survival and cancer specific survival, following PN for T1-T2 stage renal tumours. Their results showed that at 5years, cancer specific survival (CSS) was 95,4% and 85% for T1b and T2 renal tumours respectively. Overall survival (OS) was estimated to be 87,1% (T1b) and 74% (T2) respectively. The results are comparable to those achieved after radical nephrectomy with a significant advantage in terms of preservation of renal function.[17] The issue of survival following RN and PN was addressed in an analysis of the SEER database from 1988 to 2003. A total of 2,399 patients with T1b renal tumours that underwent RN (91.5%) or PN (8.5%) were included in the analysis. Within a median follow-up of 58 months there was no statistically significant difference in OS (p=0.67) and CSS (p=0.51) between RN and PN. Multivariate analysis showed that surgery type was not an independent predictor of overall mortality (p<0.05). The authors corroborated that PN provides similar outcomes in terms of OS and CSS compared to RN for T1b renal tumors.[18]

Conclusion

PN is able to provide equivalent oncological results for T1 renal tumours compared to RN. The type of surgery (PN or RN) is not related to any difference in cancer specific survival for patients with renal tumours smaller than 7cm. Moreover PN, by preserving renal function likely able to provide a better quality of life for patients with small renal masses.

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None.

Conflict of interest

The author declares no conflict of interest.

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