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Prevalence of sarcomatoid morphology in different types of renal cell carcinoma and its association with adverse prognostic factors

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Introduction and objectives: Sarcomatoid morphology (SM) in renal cell carcinoma (RCC) is associated with poor outcomes. The objective was to evaluate the prevalence of sarcomatoid morphology in different types of RCC and determine its association with other adverse prognostic factors.

Methodology: Data was retrieved and analysed from the departmental database from January 2018 to December 2021. Presence or absence of sarcomatoid morphology in different tumours and its association with tumour size, WHO/ISUP grade, necrosis, renal sinus invasion, extracapsular invasion, renal vein invasion and tumour stage were documented. SPSS was used for data analysis.

Results: Of the 94 RCCs clear cell RCC was the commonest 75/94(79.8%), followed by papillary RCC 16/94(17%) and chromophobe RCC 3/94(3.2%). SM was present in 23/94 (24.5%) RCCs and the highest prevalence was in clear cell RCC 19/75(25.3%) followed by papillary RCC 4/16(25%). SM was not seen in chromophobe RCC. Of the RCC with SM, 11/23(47.8%) had tumour size>7 cm, 23/23(100%) were WHO/ISUP grade 4, 19/23(82.6%) had tumour necrosis, 13/23 (56.5%) showed renal sinus invasion and 11/23(42.8%) had lymphovascular invasion. Of the RCC without SM, 22/71(31%) had tumour size>7 cm, 1/71(1.4%) was WHO/ISUP grade 4, 28/71(39.4%) had tumour necrosis, 14/71 (19.7%) had renal sinus invasion and 23/71(32.4%) had lymphovascular invasion. Chi square test showed a significant difference between the tumours with and without SM in relation to WHO/ISUP grade ($p<0.001$), renal sinus invasion ($p=0.003$) and tumour necrosis ($p=0.001$). A significant difference was not seen in relation to tumour size ($p=0.303$), renal vein invasion ($p=0.179$), TNM stage ($p=0.150$) and lymphovascular invasion($p=0.181$).

Discussion and conclusion: SM is more prevalent in clear cell RCC compared to other renal tumours which indicates that extensive sampling is warranted for clear cell RCC. Renal tumours with SM show a significant association with several poor prognostic factors.

Key words: clear cell renal cell carcinoma, sarcomatoid differentiation, WHO/ISUP grade

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