IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 14, Issue 1 Ver. IV (Jan. 2015), PP 43-45
www.iosrjournals.org

Sarcomatoid Change in Renal Cell Carcinoma

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Abstract: *Renal cell carcinoma of any type exhibiting atleast focal sarcomatoid / spindle cell differentiation is called as Sarcomatoid renal cell carcinoma / Carcinosarcoma / Spindled carcinoma. It is a rare change in renal cell carcinoma, mostly seen in older age group having an incidence of 1%. Sarcomatoid differentiation in renal cell carcinoma is considered to have poor prognosis. It is composed of spindle shaped cells with marked nuclear pleomorphisim and tumor giant cells. The nuclear grade is high. We present here a case of sarcomatoid renal cell carcinoma, due to its rare incidence.*
Keywords*: Sarcomatoid change, renal cell carcinoma*

I. Introduction

Currently, the 2004 WHO classification of renal tumors recognizes this transformation as "sarcomatoid change" or "sarcomatoid features" arising within RCC, rather than as a separate histologic entity.[1] Sarcomatoid differentiation usually arises within high-grade RCC,[2,3] representing a late step in the progression of this tumor type; however, the factors leading to development of sarcomatoid differentiation are unknown.

II. Case Report

A 55year old male presented with complaints of hematuria, flank pain & mass per abdomen since five months. Examination revealed a firm mass occupying the right side lumbar region. Urine examination showed microscopic hematuria. Ultrasonography showed mass in the right kidney. At exploratory laprotomy a huge renal tumor was found, for which nephrectomy was done. Grossly nephrectomy specimen measuring 13x8x6cms. Cut section shows a circumscribed gray white mass measuring 7x6cms at upper end of kidney, with areas of necrosis [Fig 1]. Microscopy shows spindle shaped cells arranged in whirling & bundle pattern. Focal areas show round to polygonal cells with clear cytoplasm & round to oval nuclei. Cells are exhibiting prominent nucleoli. Areas of necrosis are seen. [Fig 2,Fig 3]. Sarcomatoid renal cell carcinoma is positive with cytokeratin, vimentin [Fig 4,Fig 5]. and c-kitt [1,4].

III. Discussion

Sarcomatoid renal cell carcinoma (SRCC) is currently defined in the 2004 World Health Organization (WHO) classification of renal tumors, as any histologic type of renal cell carcinoma (RCC) containing foci of high-grade malignant spindle cells[5]. Many studies have defined a tumor as SRCC if even a small amount of sarcomatoid differentiation is present [3,4,6,7] whereas other studies have excluded tumors with a sarcomatoid component of less than 20% of the tumor volume [4] or less than one microscopic low-power (40x) field in size.[3] The epithelial component is composed of cells with clear to granular cytoplasm. The sarcomatoid component is composed of spindle shaped cells with marked nuclear pleomorphisim.

The epithelial component may originate from any of the well-described RCC histologic types, because of the high incidence of clear cell RCC, this histology is associated with >80% of SRCCs [8]. The diagnostic morphological feature is the intermingling of typical renal cell carcinoma with a component of sarcomatoid features and also a spindle cell component at least in one low power field [2]. Most common patterns are fibrosarcoma and malignant fibrous histiocytoma. Sometimes they are composed of strap like cells, giant cells and multinucleated giant cells intermixed with spindle cells and they mimic a rhabdomyosarcoma. Less frequently they look like liposarcomas or leiomyosarcomas. However the type of pattern does not affect the prognosis. Additional high-risk tumor characteristics such as necrosis (90%) and micro vascular invasion (30%) are present [2]. Several studies have looked at the effect of sarcomatoid transformation on prognosis and demonstrated that greater amounts were associated with a worse outcome [8] because majority of the patients have disseminated tumour (Stage IV) at the initial presentation and the median survival of all the patients is 6 months6. This may also be related to tumor grade since sarcomatoid renal cell carcinoma by definition belongs to grade IV category [9] . In addition to surgery, adjuvant radiotherapy and chemothempy is required in preventing its dismal prognosis.

IV. Figures

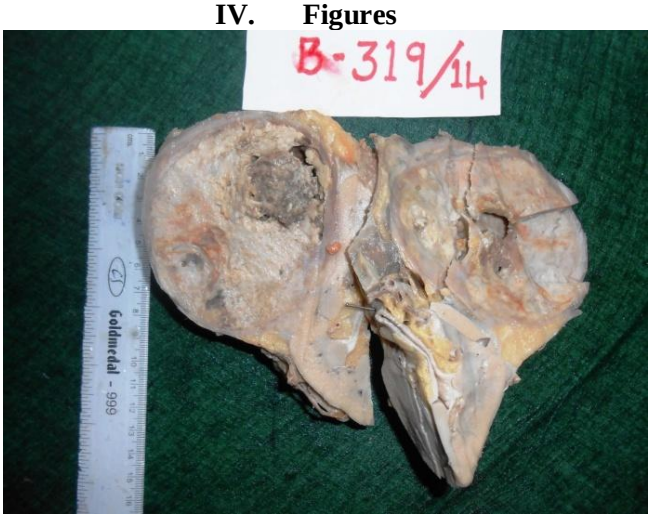

Fig 1:Gross appearance of tumour with necrotic areas

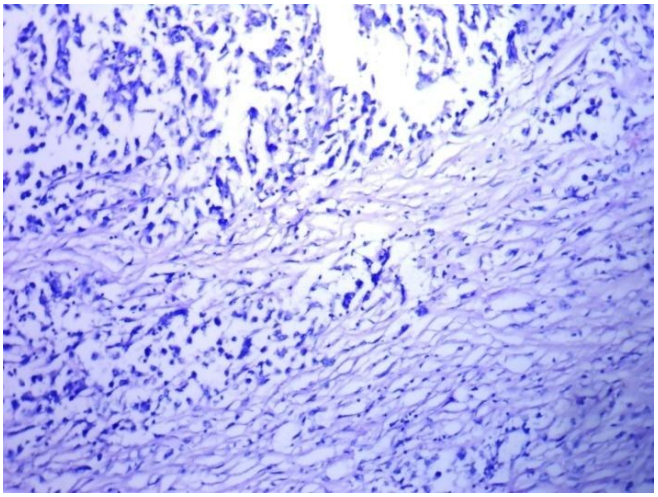

Fig 2: Carcinomatous area showing round epitheloid cells(H&E, Low power)

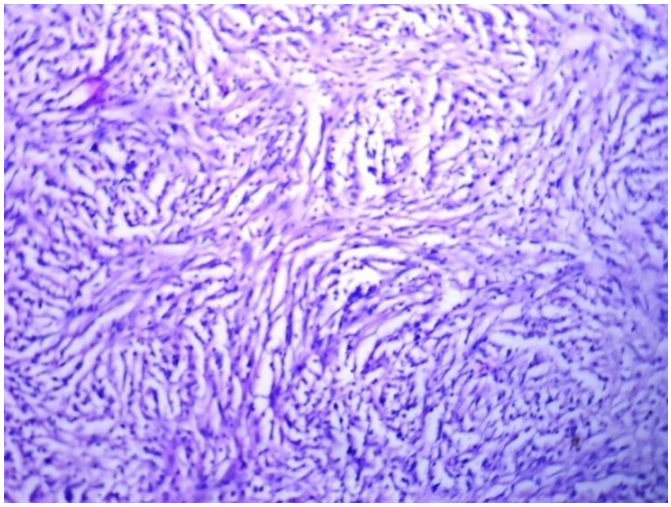

Fig 3: Sarcomatous area showing spindle cells (H&E, Low power)

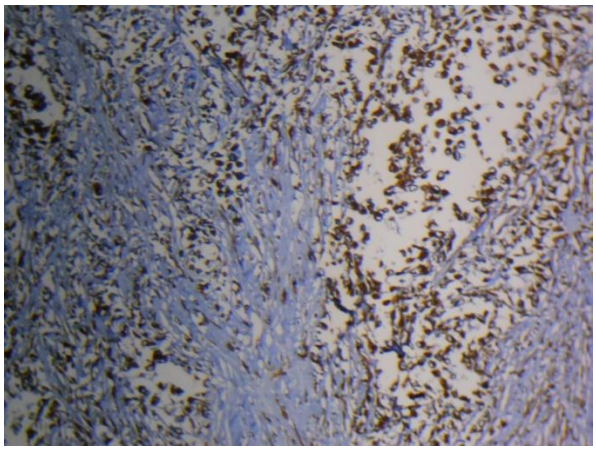

Fig 4: Cytokeratin positive (IHC)

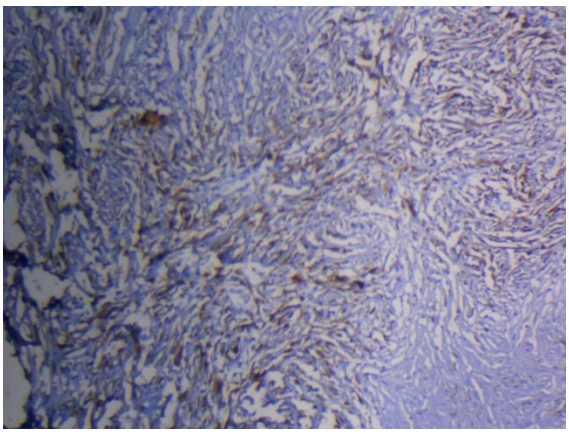

Fig 4: Vimentin positive (IHC)

V. Conclusion

Sarcomatoid differentiation usually arises within high-grade RCC and represents a late step in the progression of this tumor.It carries poor prognosis and the factors leading to development of sarcomatoid differentiation are unknown.

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