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Chromophobe variant of renal cell carcinoma – A rare case report

Harsh Dinesh Bhalsod[1]✉, **Imran Ali Khan**[2]

ABSTRACT

Chromophobe renal cell carcinoma (ChRCC) is a rare variant of renal cell carcinoma which is usually diagnosed in advanced stages of life. It is imperative to differentiate it from the more common clear cell and papillary cell carcinomas as it displays a significantly better prognosis. We hereby present a case report of female, 44 years of age, who came with complaints of pain and palpable lump in abdomen. A renal mass was observed on radiological investigation. Left nephrectomy was done. Histopathological examination was suggestive of chromophobe variety of renal cell carcinoma. We are presenting this case due to its rare incidence and to emphasize the importance of its diagnosis from its differentials.

Keywords: Chromophobe, renal cell carcinoma, nephrectomy

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Author Affiliation:
[1]Junior Resident, Department of General Surgery, Jawaharlal Nehru Medical College (JNMC), Datta Meghe Institute of medical sciences (Deemed University), Sawangi, Meghe, Wardha, Maharashtra, India, Email: bhalsodharsh94@gmail.com
[2]Professor, Department of General Surgery, Jawaharlal Nehru Medical College (JNMC), Datta Meghe Institute of medical sciences (Deemed University), Sawangi, Meghe, Wardha, Maharashtra, India, Email: drimk@rediffmail.com

✉**Corresponding author**
Junior Resident, Department of General Surgery, Jawaharlal Nehru Medical College (JNMC), Datta Meghe Institute of medical sciences (Deemed University), Sawangi Meghe, Wardha, Maharashtra, India,
Email: bhalsodharsh94@gmail.com

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1. INTRODUCTION

Renal cell carcinoma ranks 13th; among the most common cancers occurring worldwide (Jyotsna et al., 2013). 80-85% of primary renal tumours are renal cell carcinomas (Chueh et al., 2013) and are the most common form of malignant renal tumours (Aviral, 2017). Chromophobe renal cell carcinoma (ChRCC) is a malignant tumour of the kidney that constitutes 4-5% of all renal tumours (Ghadeer and Reem, 2014). It was first recognized in 1985 by Thoenes and Colls (Philip and Jeremy, 2007).

Chromophobe RCC (ChRCC) is diagnosed mainly in 6th decade of life (Rafal et al., 2009) with mean age being reported as 53 years. It shows no preponderance towards males or females therefore displaying equal distribution. At the time of diagnosis, they are mostly found to be at Grades 1 or 2 (Maram et al., 2019). A complete remission after treatment can be obtained in about 70-90%, 55-70%, 20-30% and less than 10% in TNM stages I, II, III and IV respectively (Rafal et al., 2009). The survival rates of this cancer for 5 years is 100% and for 10 years is 90%.

ChRCC is clinically distinctive as it is diagnosed at an earlier stage and has a more favourable prognosis as compared to the conventional clear cell RCC (Aviral, 2017; Izadi et al. 2020). Therefore it is of utmost importance to differentiate between these malignancies, as management protocols of each differ accordingly. Whereby report the case of a female patient, 44 years of age, diagnosed with chromophobe type of renal cell carcinoma.

2. CASE REPORT

A 44-year-old female who had no pre-existing medical condition nor prior surgical history presented to surgery OPD with complaints of pain in abdomen since past 20 days. Patient had no complaints of nausea, vomiting, or bowel habit changes. On physical examination, a lump was palpable over left lumbar region. The initial laboratory assessment revealed normal complete blood count as well as normal urinalysis and hepatobiliary enzymes values. Ultrasound examination demonstrated a hypoechoic large heterogenous, expansile lesion arising from lower pole of left kidney deforming the external contour of kidney. Multiple calcific foci noted within. On computed tomography (CT), a well-defined lesion, with heterogeneous enhancement measuring 15.0 x 14.2x 9.3 cm is seen to be arising from lower pole of left kidney with a couple of areas of calcification and stellate scar. The lesion is causing architectural distortion and involving the Gerota's fascia displacing the descending colon laterally. The above findings are suggestive of renal cell carcinoma, affecting the left kidney (fig 1 and 2).

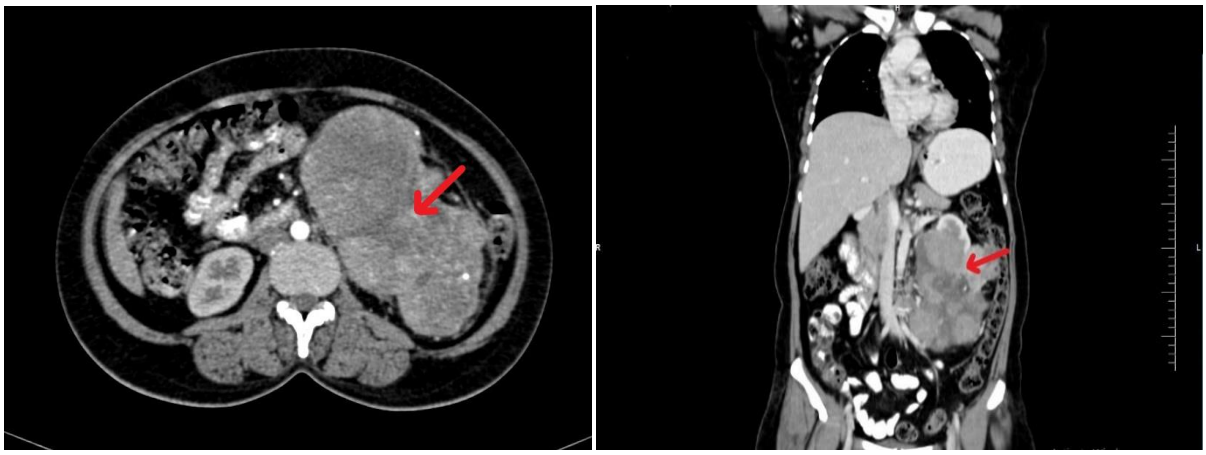

Figure 1 (axial section); **Figure 2** (coronal section) shows heterogenous lesion from the left kidney (marked red)

Nephrectomy of the left kidney was carried out and the specimen was sent for histopathology (fig 3 and 4). The post-operative period was uneventful and on Day 10 post operatively, patient was given discharge after the removal of sutures.

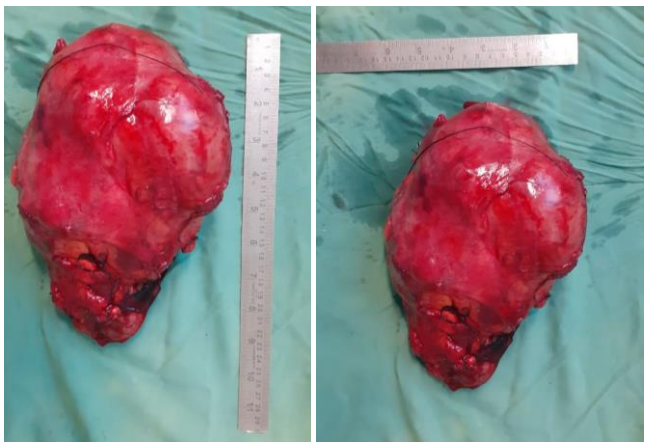

Figure 3 and Figure 4 shows a gross image of the specimen (left kidney) after nephrectomy

On gross examination, the left kidney measures 20 x 13 x 9 cm with boss-elated external surface. On cut surface tumour mass of 15 x 8.7 x 5 cm was identified on the lower pole. The tumour is heterogeneous, with multiple areas of haemorrhage and necrosis with central stellate scar. The tumour obliterates the renal pelvis and hilum. It also erodes into the perirenal fat and gerota's fascia. On microscopic examination (Figure 5 and 6) was suggestive of polygonal tumor cells arranged in sheets. The cells shows perinuclear halo with central vesicular nucleus. Tumour is of pathological stage pT4. Immunohistochemistry (IHC) was done which tested positive for Ck7 and Vimentin tested negative.

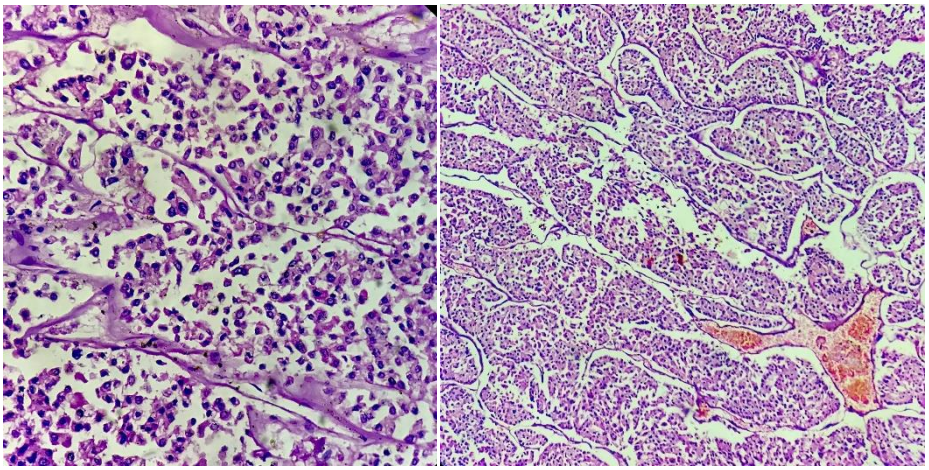

Figure 5 shows tumour cells arranged in sheets (H & E low power x10). **Figure 6** shows Individual polygonal tumour cells with eosinophilic cytoplasm. Also few cells show perinuclear halo and central vesicular nucleus (H & E high power x40)

3. DISCUSSION

Currently, under the classification World Health Organization (WHO), renal cell carcinomas are recognized to have several variants- clear cell type (70%), papillary type (10-15%), chromophobe type (4-6%), collecting duct type (about 1%) and unclassified RCC (4-5%), (Jyotsna et al., 2013; Aviral, 2017). RCCs are more often incidentally diagnosed and usually remain asymptomatic (Kuang et al., 2013). The main symptoms form a classical triad of flank pain, gross haematuria, and a palpable abdominal mass. However, these symptoms usually presents in advanced renal cell carcinoma (Kuang et al., 2013). Flank pain has been reported as the most common presenting symptom (34%) for patients with ChRCC as observed in case series (Maram et al., 2019). In our case, the only symptoms the patients present with are left flank pain and discomfort.

ChRCC primarily arise from the intercalated cells which are present in collecting (Farideh et al., 2019). Macroscopically it presents as a solitary, circumscribed uncapsulated mass (Aviral, 2017). Microscopically, it's classified into:

Type I (eosinophilic) small sized call with cytoplasm that is eosinophilic and granular in nature.

Type II (mixed) cells bare a close resemblance with eosinophilic variant, but are larger in size and consist of a peri nuclear zone which is translucent.

Type III (classical) cells are made up of well defined, thick borders, wrinkled or 'raisinoid' nuclei and abundant amounts of cytoplasm which is pale and granular in nature (Jyotsna et al., 2013)

A differential of the ChRCC is the benign renal oncocytoma. The similarities lie in radiological and cytological findings. Therefore, a confirmatory diagnosis of oncocytoma is imperative and this can be obtained by carrying out histopathological examination (Jyotsna et al., 2013). The eosinophilic variant of ChRCC most closely resembles oncocytoma. Certain histologic features specific to eosinophilic type of chromophobe variant of RCC are the sheet-like arrangement, raisinoid nuclei and the presence of type I, type II andtype III. In contrast, oncocytomas have a nested and tubular arrangement with rounded hyperchromatic nuclei and degenerative atypia (Farideh et al., 2019).

Guidelines from The National Comprehensive Cancer Network recommend surgical management as it is key in achieving long-term survival (Kuang et al., 2013). There is no standard of chemotherapeutic treatment for advanced chromophobe renal cell carcinoma. However, in studies, patients have been treated with mTOR inhibitors, c-Kit inhibitors and tyrosine kinase inhibitors (Aviral, 2017). ChRCCs are most often detected in earlier stages and are therefore associated with a favourable prognosis and better rates of survival in comparison with other subtypes of RCCs. Hence, accurately recognizing and diagnosing ChRCC is imperative (Jyotsna et al., 2013; Farideh et al., 2019).

4. CONCLUSION

We present this case report on account of the relatively rare incidence and distinctive nature of ChRCC. As ChRCCs have a much favourable outcome in comparison with other variants RCCs, identification and diagnosis and of this variant is of paramount importance.

Conflict of Interest

The authors declare no conflict of interest.

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Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

Data and materials availability

All data associated with this study are present in the paper.

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