

A Rare Case of Synchronous Renal Cell Carcinoma and Adrenocortical Carcinoma

Gupta DK, Chapagain S, Subedi PP, Luitel BR, Maskey P, Chalise PR, Sharma UK, Gyawali PR, Shrestha GK and Joshi BR

Correspondence to: Dr Dipesh Kumar Gupta

MCh Resident, Urology Unit

Department of Surgery, Tribhuvan University Teaching Hospital, Kathmandu

email: drdipeshgupta@yahoo.com

Abstract

We report a rare case of synchronous adrenocortical carcinoma and renal cell carcinoma. A 60 year male, a known diabetic and hypertensive under treatment, while undergoing routine investigations and ultrasonography of abdomen, was incidentally detected to have adrenal as well as renal masses. On computed tomography scan right adrenal mass measured about 10 x 8 cm while the renal mass was 4.6 x 3.8 cm in size. Urinary vanillylmandelic acid and 24 hr urine metanephrine were within normal limits. Similarly, serum cortisol and dihydroepiandrosterone were in normal range. Patient underwent right adrenalectomy with right partial nephrectomy. Histopathological examination of adrenal mass revealed adrenocortical carcinoma while that of renal mass revealed clear cell renal cell carcinoma.

Keywords: Adrenalectomy, adrenocortical carcinoma, renal cell carcinoma

Introduction

Adrenocortical carcinoma (ACC) is among very rare malignant tumors with an estimated incidence of 0.05–0.2% of all malignancies and account for 0.2% of deaths due to cancer. ACC often has a poor prognosis.^{1,2} Because of the juxtaposition of the adrenal gland to the kidney, ACC may involve the renal parenchyma.³ There has been reports where renal cell carcinoma (RCC) has been shown to metastasize to the contralateral adrenal gland.^{4,5} Synchronous ACC and RCC are very rare and only two such cases have been reported in the English medical literature.⁶ One of the cases had synchronous lesion in contralateral gland while another case had ipsilateral synchronous lesion but on the upper pole of kidney. We present here another case of synchronous ACC and RCC.

Case Report

A 60-year-old male otherwise asymptomatic was detected by ultrasonography of abdomen to have adrenal mass and renal mass on right side while undergoing routine evaluation for hypertension. His blood pressure and blood sugar was

under control with medication. On examination, his pulse rate and blood pressure were normal. He had unremarkable finding on abdominal examination. All other systemic examination was normal. Routine hematological tests were normal and blood biochemistry was normal for counts, liver function tests, and S. calcium. Urinary vanillylmandelic acid for 24 hr and 24 hr urinary metanephrine were within normal range i.e. 1.90 mg/g and 104.9 µg, respectively. Serum cortisol and plasma adrenaline were also within normal range. The computed tomography scan revealed an arterial phase heterogeneously enhancing isodense mass from lower pole of right kidney measuring 4.6 x 3.8 cm with multiple simple cysts in left kidney. Right adrenal gland showed an enhancing mass lesion measuring 10 x 8.7 cm. This mass was seen indenting the upper pole of right kidney but the fat plane with right kidney and liver were intact.

With clinical diagnosis of right renal mass with adrenal mass (? metastatic lesion/ ?synchronous adrenal carcinoma ; because of size criteria) was made. The patient

was undertaken for right adrenalectomy with right partial nephrectomy. Peroperatively, 10 X 10 cm sized adrenal mass was well capsulated and smooth surfaced and the cut section showed lobulated, homogenous, yellowish solid tissue with some areas of haemorrhage. Similarly, an exophytic, well defined lower polar renal mass (4 X 3 cm) was detected. The cut section of this specimen showed uniform yellowish solid tissue with no cortico medullary differentiation. Liver and colon were free from tumor macroscopically.

Microscopic examination of the adrenal mass showed tumor cells arranged in cords, trabeculae and sheets. The tumor cells were large with abundant clear bubbly to eosinophilic cytoplasm. Nuclei showed moderate to marked pleomorphism with some very large bizarre nuclei. The nuclei had vesicular chromatin and prominent nucleoli. Mitoses were seen 2/10 high power field. Lymphovascular and perineural invasion was however not seen. There was capsular invasion in some areas.

Discussion

Adrenal gland lies in juxtaposition to the kidney. So, any synchronous lesion in both structures may carry few possibilities. These might be separate malignancies of respective structures or adrenal gland being very vascular, might represent a metastasis from a renal mass. Moreover, it might be local extension of one lesion to another. So as to manage definitely, the pathology has to be identified carefully and correctly. Resected adrenocortical neoplasm often poses diagnostic difficulty in differentiating it from renal cell carcinoma. Macroscopic examination will in first hand point towards the diagnosis and should include accurate measurement of the specimen and its gross description.⁶ One of the scoring systems applied histopathologically i. e. Weiss criteria helps to differentiate from benign lesion.⁸ There are nine histological criteria according to Weiss system of grading.^{9,10} They are: (i) high nuclear grade, (ii) mitotic rate greater than five per 50 HPF, (iii) atypical mitotic figures, (iv) eosinophilic tumor cell cytoplasm (greater than 75% tumor cells), (v) diffuse architecture (greater than 33% of tumor), (vi) necrosis, (vii) venous invasion, (viii) sinusoidal invasion, and (ix) capsular invasion. A tumor is labeled malignant when it meets three or more of these histological criteria.^{9,10}

It may often be very difficult to differentiate ACC from RCC without the aid of additional studies.³ Immunohistochemistry may be of much value at this time. ACC are often positive for Vimetin, Calretinin, Inhibin, Melan-A, C-kit, and negative to CEA and keratin. RCC on the other hand are positive for EMA and keratin.

The dilemma in our present case was whether the lesions were synchronous ACC and RCC or the adrenal lesion was metastatic from RCC. Since the renal mass was in lower pole, the chances of local extension were nil. Because of the fact that the adrenal lesion was large, synchronous ACC and RCC was more likely preoperative diagnosis. Post operatively the weiss criteria being higher for the adrenal lesion i. e. 4, further supported the diagnosis.

The patient is doing fine post operatively being advised for chemotherapy for adrenal lesion. Since renal mass had complete excision with negative tumor margin, routine follow up will suffice.

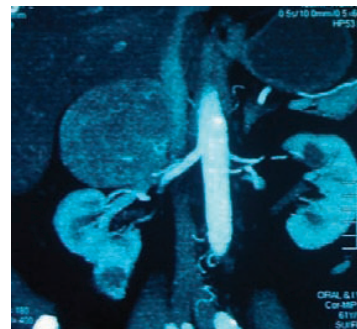


Figure 1: Lower polar right renal mass with adrenal mass

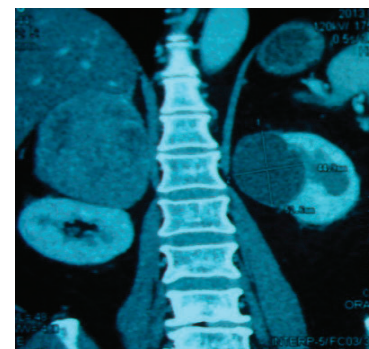


Figure 2: Left multiple renal cyst

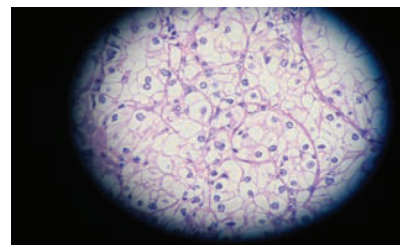


Figure 3: Clear cell renal cell carcinoma: High power view showing clear cells having abundant clear cytoplasm

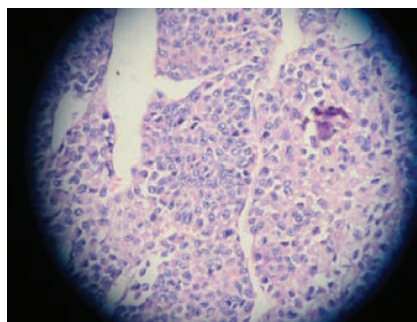


Figure 4: Adrenocortical carcinoma showing thin vascular channels with surrounding tumor cells

References

1. Peppas M, Pikounis V, Papaxoinis G, Macheras A, Economopoulos T, Raptis SA, et al. Adrenocortical carcinoma secreting cortisol, androgens and aldosterone: a case report. *Cases journal*. 2009;2:8951.
2. Schteingart DE, Doherty GM, Gauger PG, Giordano TJ, Hammer GD, Korobkin M, et al. Management of patients with adrenal cancer: recommendations of an international consensus conference. *Endocrine-related cancer*. 2005 Sep;12(3):667-80.
3. Wick MR, Chervitz DL, McGlennen RC, Dehner LP. Adrenocortical carcinoma. An immunohistochemical comparison with renal cell carcinoma. *The American journal of pathology*. 1986 Feb;122(2):343-52.
4. Foucar E, Dehner LP. Renal cell carcinoma occurring with contralateral adrenal metastasis: a clinical and pathological trap. *Archives of surgery*. 1979 Aug;114(8):959-63.
5. Ishida M, Kojima K, Ohtomo K. Renal cell carcinoma with double synchronous contralateral adrenal metastases. *Korean journal of urology*. 2010 Dec;51(12):879-81.
6. Majhi U, Murhekar KM, Reddy MP, Narayanaswamy K. A rare case of synchronous adrenocortical carcinoma and renal cell carcinoma. *Indian journal of endocrinology and metabolism*. 2011 Jul;15(3):214-6.
7. Jani P, Nasr AL, Demellawy DE. Synchronous renal cell carcinoma and adrenocortical carcinoma: a rare case report and clinicopathologic approach. *The Canadian journal of urology*. 2008 Apr;15(2):4016-9.
8. Sasano H, Suzuki T, Moriya T. Recent advances in histopathology and immunohistochemistry of adrenocortical carcinoma. *Endocrine pathology*. 2006 Winter;17(4):345-54.
9. Jain M, Kapoor S, Mishra A, Gupta S, Agarwal A. Weiss criteria in large adrenocortical tumors: a validation study. *Indian journal of pathology & microbiology*. 2010 Apr-Jun;53(2):222-6.
10. Aubert S, Wacrenier A, Leroy X, Devos P, Carnaille B, Proye C, et al. Weiss system revisited: a clinicopathologic and immunohistochemical study of 49 adrenocortical tumors. *The American journal of surgical pathology*. 2002 Dec;26(12):1612-9.