CASE REPORT

Synchronous ipsilateral adrenocortical carcinoma and renal cell carcinoma: a rare clinical entity

Madhusudan Patodia, Vishwajeet Singh, Rahul Janak Sinha, Suresh Babu

King George's Medical University, Lucknow, Uttar Pradesh, India

Correspondence to
Professor Vishwajeet Singh,
drvishwajeet68@gmail.com

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SUMMARY

Synchronous ipsilateral adrenocortical carcinoma (ACC) and renal cell carcinoma (RCC) are rare. Radiological imaging may not in all cases differentiate between the two tumours due to their proximity to each other. We encountered a case where preoperative diagnosis of renal cell carcinoma was made based on the radiological imaging but, following radical nephrectomy, this was found to be synchronous ACC and RCC after histopathological examination. The patient is doing well at 12 months of follow-up, with no clinical or radiological recurrence.

the other. Differentiation is important as far as management and prognosis are concerned.

CASE PRESENTATION

A 55-year-old woman presented with a history of dull aching right flank pain with intermittent haematuria for the past 9 months and loss of weight for the last 3 months. She had no history of profuse sweating, palpitations or fluctuations of blood pressure suggestive of adrenal tumour. On examination, her central nervous, cardiovascular and respiratory systems appeared normal. Her blood pressure was 128/82 mm Hg and pulse rate 76/min. She had no lymphadenopathy. Abdominal examination was unremarkable.

BACKGROUND

Synchronous ipsilateral adrenocortical carcinoma (ACC) and renal cell carcinoma (RCC) are a rare clinical entity.¹ It is difficult to differentiate whether these tumours are two synchronous tumours or if one is representing metastases from

INVESTIGATIONS

The patient's routine blood investigations were within normal limits. Ultrasound of the abdomen revealed a hypoechoic mass at the upper pole of the right kidney. Contrast-enhanced CT scan

Figure 1 Heterogeneous enhancing mass lesion (60×62×56 mm) at superior pole of right kidney ((A) plain film, (B)–(D) contrast films).

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Figure 2 Cut specimen showing two growths, an encapsulated solid golden-brown growth at supra renal area (7.5×5.0×4.5 cm) and another growth at upper pole of kidney (4.0×3.0×3.0 cm).

revealed a heterogeneous enhancing mass lesion (60×62×56 mm) at the upper pole of the right kidney with normal left kidney ([figure 1](#)). Chest X-ray posteroanterior view appeared normal. A radiological diagnosis of right upper pole RCC was made.

DIFFERENTIAL DIAGNOSIS

We did not consider any differential diagnosis preoperatively. This is an inherent weakness of this case report. The patient

Figure 3 Adrenocortical tumour disposed in diffuse sheaths, clusters and acini.

Figure 4 Clear cell renal cell carcinoma composed of diffuse sheaths of malignant cells with clear cytoplasm.

presented with pain and haematuria, and diagnosed as a case of RCC on the basis of radiology preoperatively. Since there were no symptoms suggestive of ACC, we did not consider it as a differential diagnosis.

TREATMENT

The patient underwent right radical nephrectomy including right adrenalectomy. On gross examination of the cut specimen, an encapsulated solid golden-brown 7.5×5.0×4.5 cm growth was present at the suprarenal area, containing areas of haemorrhage and necrosis ([figure 2](#)). Another greyish-white 4.0×3.0×3.0 cm growth was present at the upper pole of the kidney, with a thick intervening septum ([figure 2](#)).

Microscopic examination of the suprarenal growth showed features of adrenocortical tumour disposed in diffuse sheaths, clusters and acini, supported by delicate fibrovascular stroma with focal areas of haemorrhage and necrosis. The atypical cells had a high nuclear cytoplasmic ratio, vesicular nuclei with prominent nucleoli and granular eosinophilic cytoplasm. Atypical mitoses (<5/50/high-power field (HPF)) were present. Focal areas of clear cell morphology constituted <25% of tumour area. No capsular invasion was seen ([figure 3](#)). The adrenal tumour displayed a score of 4/7 according to Modified Weiss criteria for malignancy: cytoplasm (clear cells comprising 25% or less of the tumour), abnormal mitoses and necrosis. The tumour did not exhibit the following criteria: mitotic rate >5 per 50 per HPF and capsular invasion.

Microscopic examination of the kidney showed a tumour mass composed of diffuse sheaths of malignant cells with clear cytoplasm separated by delicate vascular stroma. Moderate irregular nuclei were present with clumped chromatin and prominent nucleoli. Capsular invasion was present and diagnosed as clear cell RCC ([figure 4](#)).

The adrenal tumour demonstrated vimentin, calretin and inhibin positivity. Clear cell RCC was positive for carbonic anhydrase IX, pan CK and vimentin.

A diagnosis of synchronous ipsilateral ACC and RCC was made.

OUTCOME AND FOLLOW-UP

The postoperative period was uneventful. The patient was doing well at 12 months of follow-up with no evidence of clinical or radiological recurrence.

DISCUSSION

The adrenal gland and kidney are anatomically proximal organs, so there are chances that RCC may involve the adrenal gland and, similarly, ACC may involve the adjacent renal parenchyma. Rarely, synchronous RCC and ACC may coexist together.² The clinical presentation of ACC and RCC varies, ranging from vague abdominal pain to full blown hormonal syndromes when ACC becomes biochemically active. When an adrenal tumour is present in a patient with RCC, radiological imaging cannot diagnose with certainty whether it is a primary adrenal neo-

plasm or if it is metastasis.³ Primary ACC is, relative to metastatic RCC, more hypovascular to the adrenal gland.⁴ Histopathological examination (HPE) of the resected specimen can only differentiate between these two entity with the aid of immunohistochemistry.

In our case, history, clinical examination and radiological findings were suggestive of RCC, for which we performed radical nephrectomy. After gross examination of the cut specimen, it was evident that there were two lesions, with a thick intervening septum. HPE confirmed the presence of primary ACC and primary RCC. Immunohistochemical profile of the two lesions also supported the contention that they were two different primary tumours. Usually, adrenal cortical carcinoma presents with advanced stage and, whenever localised, there is high risk of local recurrence and metastatic progression. Hence, management of ACC is multimodal therapy.

No further treatment was required for the RCC as it was small and confined to the kidney.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

Patient's perspective

Before the operation, we were told only about one malignancy in the kidney. After the operation, we came to know that my mother had two malignancies in two different organs, and that both had been removed. We are worried about the prognosis.

Learning points

- Synchronous ipsilateral renal cell carcinoma (RCC) and adrenocortical carcinoma (ACC) are rare.
- The clinical presentation and radiological imaging cannot in all cases diagnose the presence of synchronous primary ipsilateral RCC and ACC preoperatively.
- Histopathological examination and immunohistochemistry are confirmatory for diagnosis.

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