Adrenal Collision Tumor Composed of Adrenocortical Adenoma and Pheochromocytoma

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To the Editor: A 66-year-old male was seen in the outpatient clinics of Beijing Friendship Hospital with the complaint of right flank pain for the past 5 months. Computed tomography (CT) revealed the presence of adrenal masses [Figure 1a]. Serum norepinephrine, epinephrine, and dopamine levels were normal, while cortisol, renin, and angiotensin levels were elevated. He was then admitted to the hospital. This patient had a history of controlled hypertension under drug treatment and noninsulin-dependent Type II diabetes.

Volume expansion therapy with phenoxybenzamine and hydroxyethyl starch 130/0.4 injection and sodium chloride injection were administrated for 7 days. After that, he underwent right laparoscopic adrenalectomy. The size of the adrenalectomy specimen was approximately 6.0 cm × 5.0 cm × 10.0 cm. Macroscopically, the cut surface showed a brown nodule measuring 5.5 cm in diameter and a yellowish orange nodule measuring 2.5 cm in diameter [Figure 1b]. Pathological test revealed that the right adrenalectomy specimen was composed of adrenocortical adenoma (2.5 cm × 1.8 cm × 2.0 cm) and pheochromocytoma (5.5 cm × 4.0 cm × 4.0 cm). Immunohistochemical test showed the following: CK (−), vimentin (+), Ki-67 (almost negative), HMB45 (−), CD34 (−), CD31 (−), FCL-1 (−), actin (−), desmin (−), S-100 (+), CD56 (+), Syn (+), and CgA (+) [Figure 1c].

This case represented an unusual combination of adrenocortical adenoma and pheochromocytoma. The adrenal gland is composed of two main parts with different embryologic origins. A collision tumor is a rare condition in which two independent neoplasms

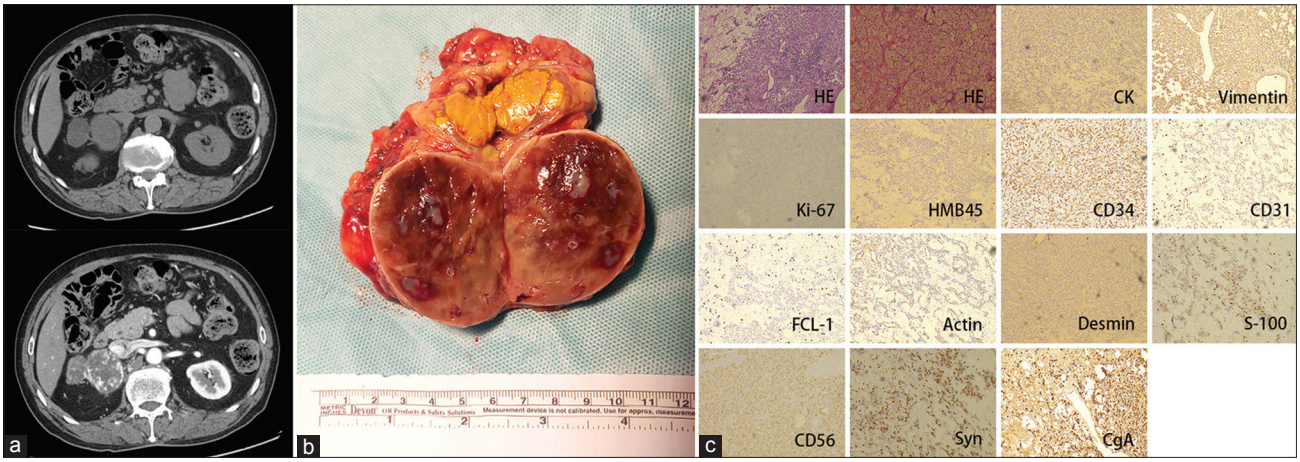

Figure 1: Computed tomography scanning images of a 66-year-old male showing the presence of adrenal masses (a). Macroscopic appearance of the cut surface of the adrenal mass (b). The immunohistochemical test showing CK (−), vimentin (+), Ki-67 (almost negative), *HMB*45 (−), CD34 (−), CD31 (−), FCL-1 (−), actin (−), desmin (−), S-100 (+), CD56 (+), Syn (+), and CgA (+) (c; original magnification ×200).

without a substantial histologic admixture at the interface coexist adjacent to each other. The most commonly described collision tumor in the adrenal gland is adrenal adenoma with myelolipoma.[1] The other collision tumors reported in the adrenal glands include cases such as metastasis into an adenoma or myelolipoma and pheochromocytoma with adenoma or myelolipoma.[2,3]

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In the present case, the larger tissue specimen demonstrated pheochromocytoma morphology, whereas the smaller tissue specimen showed typical characteristics of adrenocortical adenoma of the adrenal gland.

The clinical manifestation of pheochromocytoma was not typical. The usual associated features, such as attacks of perspiration, palpitations, headaches, and pallor, were absent. The presence of single bilobular mass in CT suggested a diagnosis of an adrenocortical adenoma. Biochemical tests performed prior to surgery suggested no sign of pheochromocytoma with normal metanephrine, normetanephrine, and dopamine levels. However, macroscopical and histopathological evaluation of the adrenalectomy material confirmed the presence of both adrenocortical adenoma and pheochromocytoma in the same gland, which is the key diagnostic finding.

Why were the cortisol, renin, and angiotensin all elevated? It was speculated that epinephrine released by pheochromocytoma might stimulate adrenocorticotropic hormone release and increase cortical functions.[4] Another possibility was that the adrenocortical adenoma promoted the release of the cortisol, renin, and angiotensin.

In conclusion, even if the radiographic and/or biochemical evaluation of an adrenal mass suggested adrenocortical adenoma, clinicians still need to be aware of the probability of pheochromocytoma to avoid intraoperative hypertensive crisis. Thus, we strongly recommended conducting biochemical tests to rule out pheochromocytoma for adrenal mass before surgery.[5] Volume expansion therapy before surgery is also recommended, if appropriate.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

References

1. Abdullazade S, Sahin I, Tezel GG. Case report a rare case of collision tumor: Coexistence of adrenocortical adenoma and pheochromocytoma in the same adrenal gland. J Med Cases 2012;3:63-7. doi: 10.4021/jmc451w.
2. Untch BR, Shia J, Downey RJ, Carrasquillo JA, Panicek DM, Strong VE, *et al.* Imaging and management of a small cell lung cancer metastasis/adrenal adenoma collision tumor: A case report and review of the literature. World J Surg Oncol 2014;12:45. doi: 10.1186/1477-7819-12-45.
3. Reichert R, Schuch A, Luersen GF. Adrenal collision tumor: Renal carcinoma metastasis within adrenal adenoma. Clin Biomed Res 2015; 35:169-171. doi: 10.4322/2357-9730.57233.
4. Cope O, Labbe JP, Raker JW, Bland EF. Pheochromocytoma and adrenal cortical adenoma; report of a case with both tumors and discussion of their relation. J Clin Endocrinol Metab 1952;12:875-80. doi: 10.1210/jcem-12-7-875.
5. Myklejord DJ. Undiagnosed pheochromocytoma: The anesthesiologist nightmare. Clin Med Res 2004;2:59-62. doi: 10.3121/cmr.2.1.59.