

Combined Adrenal Medullary Hyperplasia and Myelolipoma: A Mimicker of Pheochromocytoma

Adrenal Medüller Hiperplazi ve Myelolipom Kombinasyonu: Bir Feokromositoma Taklitçisi

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Abstract

A 53-year-old female patient with long-standing hypertension was evaluated for left flank pain. Abdominal CT scan revealed a 2,8 cm left adrenal mass. Metanephrine, normetanephrine and vanilylmandelic acid levels in a 24-hour urine sample were increased. The levels of serum cortisol, renin, aldosterone, calcitonin, parathormone, calcium and phosphate were normal. Left adrenalectomy was performed. There was a nodular mass with a red cut surface in medullary region. The medulla was enlarged in other parts. On microscopic examination, the mass was composed of mature adipose tissue admixed with hematopoietic cells. The medulla was hyperplastic with a corticomedullary ratio of 1:5. After surgery, blood pressure and catecholamine levels normalized. Although myelolipomas are incidental findings, they can rarely present with endocrine dysfunction. In conclusion, surgical excision should be considered in adrenal incidentalomas with characteristic radiographic features of myelolipoma, presenting with biochemical abnormalities. *Türk Jem 2009; 13: 84-6*

Key words: Myelolipoma, adrenal medullary hyperplasia, pheochromocytoma

Özet

Uzun süredir hipertansif olan 53 yaşında kadın hasta sol yan ağrısı nedeniyle tetkik edildi. Batın BT de sol adrenalde 2,8 cm çapında kitle saptandı. 24 saatlik idrarda metanefrin, normetanefrin ve vanil mandelik asit seviyeleri yüksekti. Serum kortizol, renin, aldosteron, kalsitonin, fosfat seviyeleri normaldi. Sol adrenalectomi uygulandı. Medüller bölgede kesit yüzü kırmızı olan nodüler kitle görüldü. Medullanın diğer alanları genişlemişti. Mikroskopik incelemede kitle matür yağ dokusu ve hematopoetik hücrelerden oluşuyordu. Kortikomedüller oran ise 1:5 idi. Cerrahi sonrası kan basıncı ve katekolamin seviyeleri normale döndü. Myelolipomlar insidental lezyonlar olmakla birlikte nadiren endokrin disfonksiyonla ortaya çıkabilirler. Sonuç olarak biyokimyasal anormallikle ortaya çıkan adrenal insidentalomalar radyolojik olarak karakteristik myelolipom özellikleri gösterse bile cerrahi eksizyon düşünülmelidir. *Türk Jem 2009; 13: 84-6*

Anahtar kelimeler: Myelolipom, adrenal medüller hiperplazi, feokromositoma

Introduction

Adrenal myelolipomas are rare, benign, hormonally nonfunctioning tumors that are composed of mature adipose tissue and normal hematopoietic tissues. They are usually asymptomatic and are often found incidentally on radiographic studies. The pathogenesis of adrenal myelolipomas remains unclear, but most of the evidence supports the metaplastic changes of reticuloendothelial cells of blood capillaries as the etiology (1).

These benign tumors usually remain small, but occasionally they reach massive proportions and become symptomatic (2). Most of the cases are not associated with any specific endocrine dysfunction. Adrenal myelolipoma, which is a nonfunctional tumor, may be found coincidentally in patients affected by Cushing's syndrome, hyperaldosteronism, pheochromocytoma, adrenogenital syndrome, and virilization (3,4,5).

Here, we report a case of myelolipoma associated with medullary hyperplasia presenting with the clinical findings of pheochromocytoma.

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Case

A 53-year-old female patient with long-standing hypertension and diabetes mellitus was evaluated for a 28 mm left adrenal mass, incidentally discovered by CT scan during workup of left flank pain. The levels of metanephrine (682.6 µg/24 h, normal: up to 341), normetanephrine (842.7 µg/24 h, normal: up to 444) and vanillylmandelic acid (7.42 mg/24 h, normal: up to 6.5) in a 24-hour urine sample were increased. Adrenalin and noradrenalin levels in the 24-hour urine sample were within normal ranges. The levels of serum cortisol, renin, aldosterone, calcitonin, parathormone, calcium, phosphate and albumin were normal. Physical examination was normal and blood pressure was 150/95 mm Hg. Abdominal CT scan revealed a 28 mm left adrenal mass and a 13 mm left renal lower-pole calculus. The whole-body 18F- Fluoro-2-deoxy-D-Glucose Positron Emission Tomography (FDG PET) scan did not show increased 18F-FDG uptake. She underwent subtotal thyroidectomy 8 years ago for nodular goitre. The resected specimen has revealed follicular adenoma in the left lobe of the thyroid gland, but no sign of medullary thyroid cancer or hyperplasia. Left adrenalectomy was performed with a suspicion of pheochromocytoma. The gland weighed 23 grams. On cut sections a 2.8 cm nodular lesion with a red surface located in the medulla was seen. Also, the medulla was enlarged in every part of the organ, measuring up to 0.8 cm in thickness. On microscopic examination, the nodule was surrounded with a thin cortex, which was composed of mature adipose tissue admixed with hematopoietic cells (Figure 1a). Although cortex was normal, apart from the nodule, medulla was entirely composed of hyperplastic pheochromocytes. The corticomedullary ratio was 1:5 (Figure 1b-c). The pheochromocytes showed diffuse strong positivity for chromogranin-A in immunohistochemical examination (Figure 1d). The

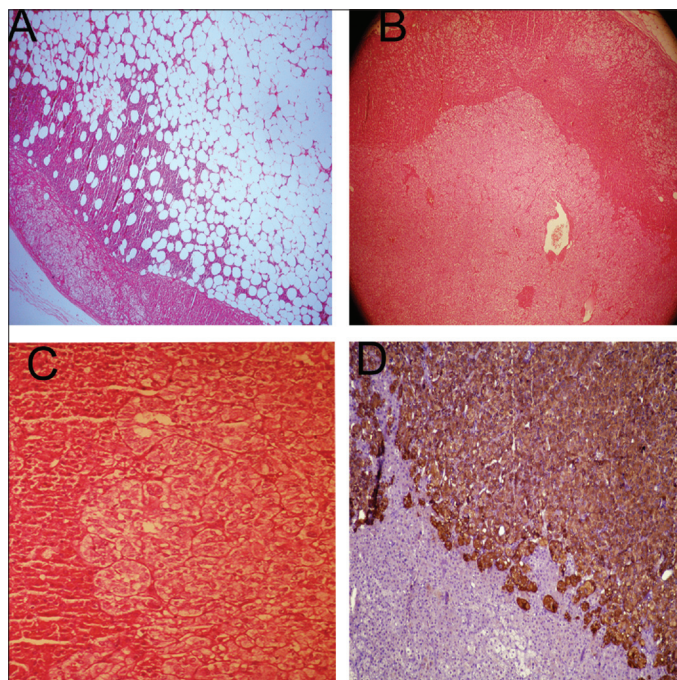


Figure 1. a) Adipose tissue and hematopoietic cells near adrenal cortex, HEx40, b) Decreased corticomedullary ratio highlighting the medullary hyperplasia, HEx40 c) Increased pheochromocytes in the adrenal medulla, HEx200 d) Immunoperoxidase staining for chromogranin-A showing diffuse positivity in the hyperplastic medulla, x10

diagnosis of combined myelolipoma and medullary hyperplasia was established according to these findings. During the postoperative period, transient hypotension occurred and was treated with saline infusion. One week after the operation, blood pressure normalized and the antihypertensive medication was stopped. Metanephrine and normetanephrine levels normalized.

Discussion

Adrenal incidentalomas are adrenal masses that are discovered serendipitously during a radiologic examination performed for indications other than evaluation of adrenal diseases. Adrenal incidentalomas are found in 0.3% to 5% of patients undergoing abdominal CT, and adrenal myelolipoma accounts for about 1.9% of adrenal incidentalomas (6). In a recent prospective study, during the follow-up after 24 months, it was observed that 10.2% of adenomas showed increase in tumor diameter (7). The 2002 National Institutes of Health state-of-the-science statement on management of incidentalomas proposed surgical removal of lesions larger than 6 cm, either adrenalectomy or close follow-up for intermediate lesions between 4 and 6 cm, and a conservative approach for lesions smaller than 4 cm (8). In our case, although the tumor was smaller than 4 cm, adrenalectomy was performed because metanephrine, normetanephrine and vanillylmandelic acid levels in a 24-hour urine sample were increased.

Myelolipomas are benign tumors of the adrenal gland. These lesions have been recognized with increasing frequency, because of their characteristic appearance on CT scanning and MRI, which is helpful in establishing the diagnosis. These tumors are generally smaller than 5 cm, unilateral, asymptomatic and benign, containing hematopoietic and fatty elements. They sometimes grow to a very large size and cause pressure effects which manifest as abdominal pain. Treatment of adrenal myelolipoma is usually conservative. Periodic follow-up with ultrasound or CT scan over a period of 1 to 2 years has been recommended, with surgery reserved for symptomatic patients.

The lesions are rarely hormonally active and can present with endocrine dysfunction. In the literature, several cases of adrenal myelolipomas associated with hyperaldosteronism, congenital adrenal hyperplasia and Cushing's syndrome were reported (3,4,5). An association with homolateral or contralateral pheochromocytoma has also been reported (9,10). Although the cause of the lesion is unknown, combination of myelolipoma with hormonally active neoplasms, as in our case, supports the theory that hormonal microenvironment plays a role in the development of these lesions (4).

To our knowledge, only one case associated with adrenal medullary hyperplasia was reported to date (11). We believe this to be the second case of adrenal medullary hyperplasia associated with myelolipoma causing a syndrome of pheochromocytoma. In the previous case, myelolipoma and medullary hyperplasia were fused, while in our case, they were not fused, but both were located in the medullary region of the gland. These findings support the theory of myelolipomas being a metaplastic change (1).

We did not perform RET mutation testing in this patient who appears to be a sporadic pheochromocytoma case and has no family history of MEN 2 syndrome. Measurements of serum parathormone and basal serum calcitonin measurements were normal, and the patient had undergone subtotal thyroidectomy previously, which did not show any sign of medullary thyroid car-

cinoma. The previous case of adrenal medullary hyperplasia combined with myelolipoma was also a unilateral, sporadic case showing no abnormality in RET proto-oncogene (11).

In conclusion, myelolipomas can rarely be associated with other hormone-secreting tumors, and appropriate biochemical and radiologic evaluation should be performed in cases with unusual symptoms and signs.

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