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Sarcoidosis and adrenal angiomyolipoma - A rare tumor and a rarer coincidence

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Abstract. Angiomyolipoma is a benign mesenchymal tumor occurring in about 0.3 % of the general population. Angiomyolipoma of the adrenal gland is a rare entity, and only 5 cases have been reported so far in English literature. Sarcoidosis is a systemic illness of unknown etiology characterized histologically by non-caseating epithelioid granulomas in the affected tissues. Angiomyolipoma of the adrenal occurring in sarcoidosis is an unusual association with no prior published reports. We describe a case of adrenal angiomyolipoma in a 60 year old female with sarcoidosis. *(Sarcoidosis Vasc Diffuse Lung Dis 2017; 34: 81-84)*

Key words: granuloma, hypercalcemia, tumor

Introduction

Angiomyolipoma (AML) are rare benign mesenchymal tumors occurring sporadically or as part of a syndrome like tuberous sclerosis. Commonly found in kidneys, they are asymptomatic and often detected incidentally on imaging. AML of the adrenal gland is a rare entity, and only 5 cases have been reported so far in English literature (1). Sarcoidosis is a systemic illness of unknown etiology characterized histologically by non-caseating epithelioid granulomas in the affected tissues. It commonly affects the lungs, lymph nodes, skin, eye and the central nervous system. Endocrine organs are rarely affected, and sarcoid granulomas have been reported in the hypothalamus, pituitary, thyroid, parathyroid and rarely adrenal (2). AML of the adrenal occurring in sarcoidosis is an unusual association and has never been reported till now. Herewith we report a case of adrenal AML in a 60-year-old female with sarcoidosis.

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Case Report

A 60 year old post-menopausal female presented with abdominal pain for the past six months. The dull aching pain was in the left hypochondrium and loin. She also complained of intermittent fever, fatigue, diminished appetite and shortness of breath on exertion. There was no hematuria, dysuria, constipation or diarrhea. On examination, her blood pressure was 146/90 mmHg with fine crepitations in both lung fields. She had hepatomegaly extending 4 cm below the right costal margin and a firm lobular mass in the left loin extending up to the hypochondrium.

She also had a left supra-clavicular non-tender 1 x 1 cm lymph node which was not fixed to the underlying tissue. She did not have any ocular, cardiac, neurological or skin abnormality on examination. No other family member had similar illness, and there was no family history of cancer-related morbidity or mortality.

Her biochemical parameters were as follows: corrected serum calcium 12 mg/dl (8.5-10.5), phosphorus 3.5 mg/dl (2.5-4.5), intact parathyroid hormone (PTH) <3 pg/ml (10-65), 25-hydroxyvitamin D 21.3 ng/ml (30-100), urine calcium-creatinine ratio 0.38 (n<0.2), thyroid stimulating hormone 22.84 IU/ml (0.3-5.5), free thyroxine 0.73 ng/dl (0.79-1.82), angiotensin-converting enzyme (ACE) level 294 U/L (8-65),lactate dehydrogenase 1120 U/L (115-220), basal cortisol 12.5 g/dl (5-25), post-overnight dexamethasone suppressed serum cortisol 1.13 g /dl (n<1.8), plasma free normetanephrine 122 ng/l (n<180), & dehydro-epiandrosterone sulphate 25.0 g /dl (20-250). Computerized tomography (CT) of thorax and abdomen (figure 1a & 1b) revealed a heterogeneous hypo dense lesion in the left suprarenal lesion with an attenuation value of -25 HU. Both liver and spleen were enlarged, with multiple irregular nodular hypodense areas distributed throughout the parenchyma. Multiple intra-abdominal lymphadenopathy and mediastinal adenopathy were also noted. Multiple randomly distributed micronodules and a few parenchymal fibrotic bands

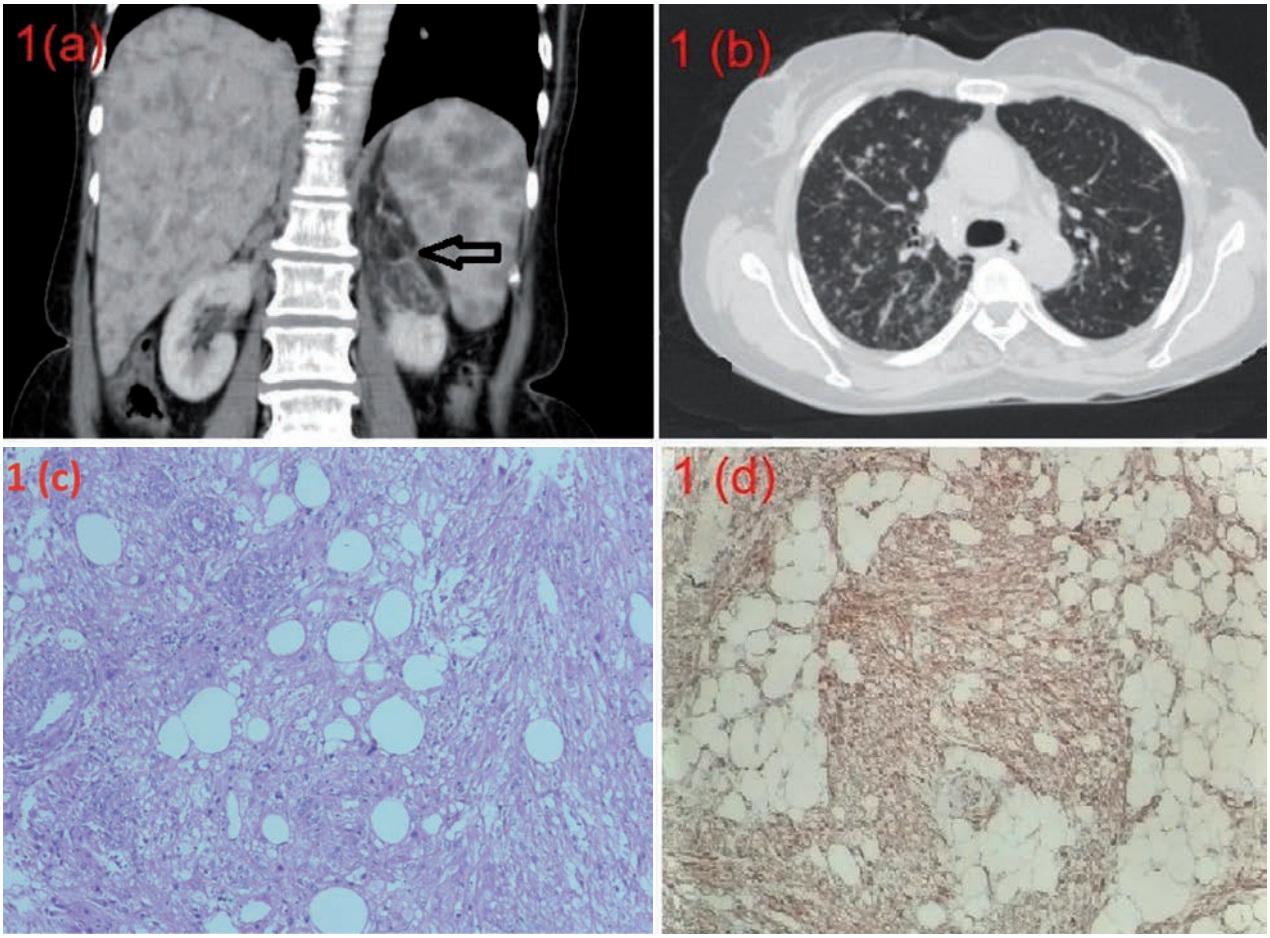

Fig. 1. (a) Computerized tomography (CT) scan of abdomen showing a heterogeneous supra-renal mass (arrow) in left side with multiple hypodense nodules in liver and spleen (b) High resolution CT (HRCT) of chest showing sarcoid nodules in both lung fields (c) Histopathological section of adrenal tumor showing features suggestive of angiomyolipoma (H&E X 200) (d) Immunohistochemistry (IHC) showing positive HMB-45 staining in adrenal specimen

are noted in both lung fields suggestive of interstitial lung disease (ILD). Induced sputum culture for acid-fast bacilli was negative. Broncho-alveolar lavage culture for Mycobacterium was also negative. During the admission, she developed severe abdominal pain with increasing size of the tumor. Repeat imaging revealed features of hemorrhage within the tumor and she was operated. Left adrenalectomy and partial nephrectomy was done. The size of tumour was approximately 12 x 10 x 8 cm with a well-defined capsule arising from the distal segment of the medial limb of the left adrenal gland. It was densely adherent to the surrounding tissues, including the upper pole of the left kidney. Additionally, the breach of the capsule was noted in those adherent areas. Histopathological examination showed sheets of mature fat cells admixed with medium sized vessels and smooth muscle cells without any bone marrow element (figure 1c). Immunohistochemistry (positive HMB-45 staining) of the removed tumor confirmed the diagnosis as adrenal AML (figure 1d).

Cervical lymph node biopsy (figure 2a &2b) showed non caseating epithelioid granulomatous lymphadenitis. Staining for acid fast bacilli and fungus was negative. Immuno-staining for lymphoma was also negative. Liver biopsy (figure 2c& 2d) revealed compact noncaseating epithelioid granulomas with peri-granulomatous fibrosis. In the background of her clinical profile of generalized lymphadenopathy, hepatosplenomegaly, ILD, elevated ACE level,

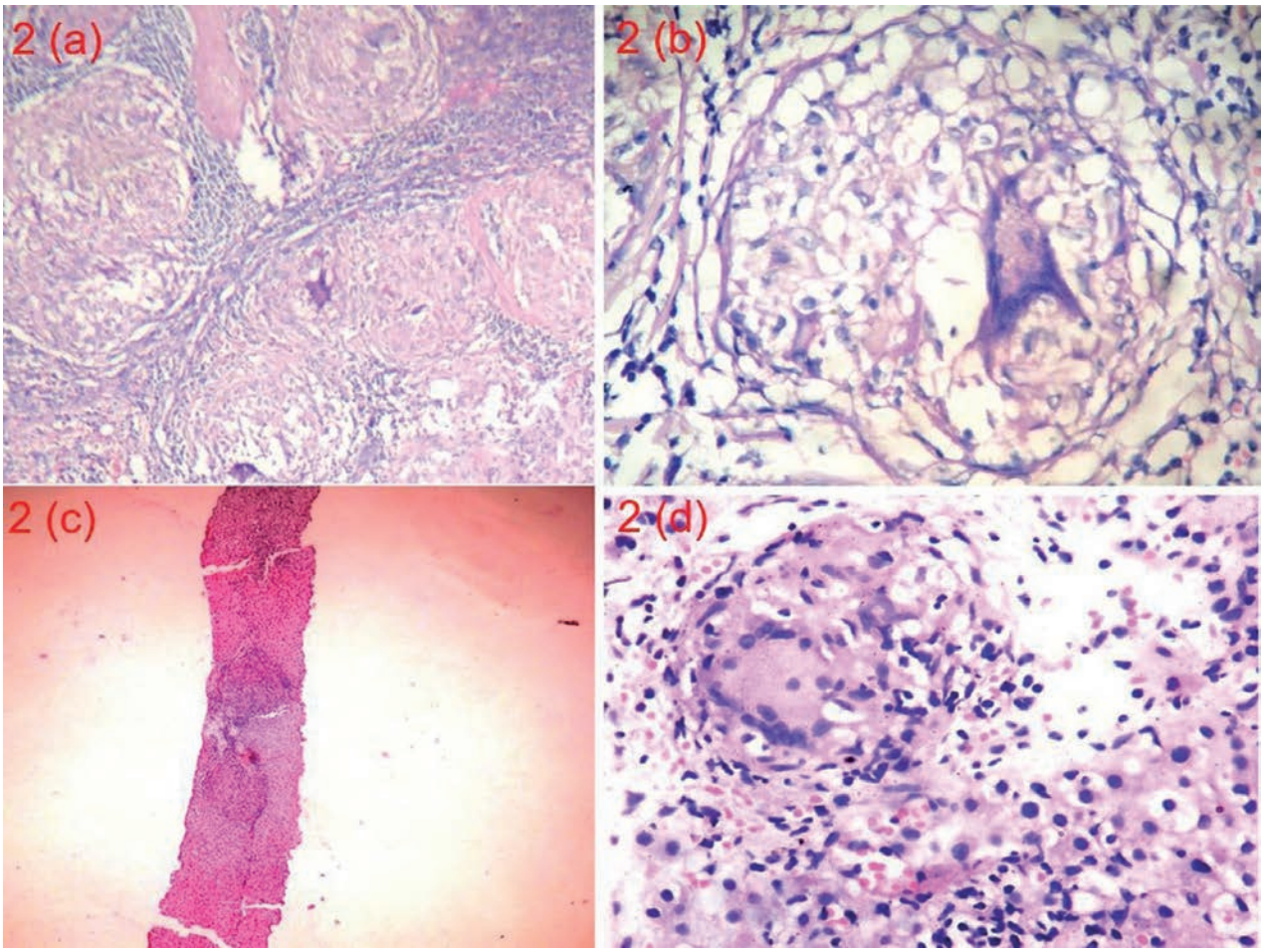

Fig. 2. (a) Photomicrograph of cervical lymph node biopsy showing multiple granulomas (H&E X 100) (b) Histopathological section of lymph node showing non-caseating epithelioid granulomatous lymphadenitis (H&E X 400) (c) Core of liver biopsy with collections of granulomas (H&E X 100) (d) Histopathological section of liver lesion showing langhans type giant cells and few epithelioid cells with lack of caseous necrosis (H&E X 400)

PTH-independent hypercalcemia, and biopsy finding of non-caseating granuloma in cervical lymph node and liver, sarcoidosis was diagnosed. She was started on prednisolone and her calcium levels normalized. She was also put on thyroxine (50 g) for hypothyroidism. The patient improved clinically with steroids. The steroids were tapered and stopped after one year. She is currently off steroids and her serum calcium is normal. Follow up imaging revealed that the nodules in lungs have decreased significantly in size and lesions in other organs have disappeared.

Discussion

AML is a benign mesenchymal tumor occurring in about 0.3% of the general population and accounting for 3% of solid renal tumors (3).They are part of a group of 'tumors of perivascular epithelioid cell origin'. They occur more frequently in women than in men with a peak incidence in the fourth decade (4). The most common organ involved is the kidney. Renal AML occurring as part of syndromes like tuberous sclerosis is recurrent and invasive with a tendency for spontaneous bleeding due to abnormal elastin in the vessel wall. Extra renal AML is rare with liver being the most common organ involved. It is more common in men, does not recur, and is not invasive, with no association with tuberous sclerosis (5). Extra adrenal AML is often a solitary and well circumscribed tumor. Other organs affected are bone, colon, heart, lung, parotid gland, skin spermatic cord etc. AML of the adrenal gland is very rare with only 5 cases reported till now. Often asymptomatic, they are usually detected as incidental adrenal masses on imaging. AML is typically well marginated with low attenuation values suggesting increased fat content on imaging. Rarely ^{123}I-metaiodobenzylguanidine (^{123}I-MIBG) scan positivity has been reported but in our case, ^{123}I-MIBG was negative (6). The exact tumorigenesis of AML is not known till now. In a similar tumor i.e. adrenal myelolipoma, the differential proliferation of mesenchymal stem cells as a tissue response to chronic stress in the form of infection, inflammation or necrosis has been postulated as the most plausible mechanism of tumorigenesis (7). Adrenal AML occurring in the setting of systemic inflammation due to sarcoidosis, as in our case has not been reported till now. However, the speculative pathogenesis of AML as a tissue response to chronic systemic inflammation is highly arguable and the coincidental nature of the two diseases seems to be the main hypothesis.

Management of AML can be either surgery or careful observation. Smaller non-functional lesions detected incidentally can be left alone and monitored serially. Lesions >5 cm can be operated as there is a risk of spontaneous rupture or rupture with minimal trauma with catastrophic consequences as has been reported in patients on anti-coagulant therapy (8). Surgery is also warranted for a variant of AML called epithelioid AML as it is known to have malignant potential. In our patient the lesion was big, and she developed (9) hemorrhage within the lesion with a potential risk of rupture anytime. Hence, she was operated with no complications post-operatively.

AML of the adrenal is rare and can occur in the setting of chronic inflammation due to sarcoidosis, and this is the first instance of such an association being reported.

References

1. Hu H, Xi X. Giant adrenal angiomyolipoma. J Clin Endocrinol Metab 2012; 97(11): 3835-6.
2. Cha YS, Kim HJ, Lee JC, Yoo J, Hwang SS, Cho H-M. Left Adrenal Sarcoidosis. J Korean Surg Soc 2010; 79(4): 306.
3. Goswami A, Sharma A, Khullar R, Soni V, Baijal M, Chowbey P. Adrenal angiomyolipoma: A case report and review of literature. J Minimal Access Surg 2014; 10(4): 213-5.
4. Hussain T, Al-Hamali S. Pathophysiology and management aspects of adrenal angiomyolipomas. Ann R Coll Surg Engl 2012; 94(4): 224-6.
5. Gemenetzis G, Kostidou E, Goula K, Smyrniotis V, Arkadopoulos N. Angiomyolipoma of the Thoracic Wall: An Extremely Rare Diagnostic Challenge. Case Rep Surg 2014; 2014: e576970.
6. Takasu N, Hayashi M, Takara M, Iha T, Kouki T, Ohshiro Y, et al. False-positive 123I-metaiodobenzylguanidine (MIBG) scan in a patient with angiomyolipoma; positive MIBG scan does not necessarily indicate the presence of pheochromocytoma. Intern Med Tokyo Jpn 2007; 46(20): 1717-21.
7. Olsson CA, Krane RJ, Klugo RC, Selikowitz SM. Adrenal myelolipoma. Surgery 1973; 73(5): 665-70.
8. Yener O, Özçelik A. Angiomyolipoma of the Right Adrenal Gland. ISRN Surg [Internet]. 2011 [cited 2015 Apr 12]; 2011. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3195286/
9. Mete O, van der Kwast TH. Epithelioid angiomyolipoma: a morphologically distinct variant that mimics a variety of intra-abdominal neoplasms. Arch Pathol Lab Med 2011;135(5):665–70.