Bilateral Giant Renal Angiomyolipoma in a Patient with Tuberous Sclerosis Complex: A Case Report

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ABSTRAK

Kompleks tuberous sklerosis memiliki beberapa manifestasi di ginjal meliputi angiomiolipoma dan neoplasma epithelial renalis. Angiomiolipoma bilateral besar sangatlah jarang dijumpai. Kami melaporkan kasus angiomiolipoma bilateral besar dan mendiskusikan diagnosis dan manajemen kasus tersebut. Laki-laki usia 22 tahun masuk ke rumah sakit karena nyeri pinggang, hematuria, dan rasa penuh di perut. Pasien memiliki riwayat epilepsy, retardasi mental, dan gangguan perkembangan saat masa kanak-kanak. Pasien didiagnosis memiliki angiofibroma pada wajah sejak 10 tahun yang lalu. CT scan dan MRI abdomen iddapatkan massa besar berlobus-lobus yang memiliki densiteas heterogen bersesuaian dengan densitas lemak. Berdasarkan penemuan tersebut, kami mendiagnosis pasien dengan angiomiolipoma bilateral besar. Dilakukan manajemen konserfatif dan direncanakan nefrektomi total pada ginjal kira apabila perdarahan sangat masif. Angiomiolipoma yang disertai kompleks tuberous sclerosis biasanya bersifat multiple dan dapat tumbuh sangat besar. Angiomiolipoma bilateral besar, yang kasusnya sangat jarang, dapat ditatalaksana dengan terapi konserfatif apabila tidak dijumpai perdarahan yang signifikan.

Kata kunci: *angiomiolipoma, terapi konserfatif, tuberous sclerosis kompleks.*

ABSTRACT

Tuberous sclerosis complex (TSC) has several renal manifestations including angiomyolipomas (AML) and renal epithelial neoplasms. A bilateral giant renal AML is extremely rare. We report a case of giant bilateral AML and discuss the diagnosis and treatment of it. The 22-year-old man was admitted due to bilateral flank pain, gross hematuria, and abdominal fullness. He had history of epilepsy, mental retardation, and delayed development during childhood. He had angiofibroma on his face since 10 years ago. Abdominal CT and MRI revealed large lobulated heterogeneous mass with fatty content. Based on those findings, we diagnosed the patient with bilateral giant renal AML. We gave conservative management for the patient and planned to total nephrectomy on the left kidney if the continued bleeding occurred. AML associated with TSC occur more frequently as multiple lesions and grows to larger size than idiopathic AML. Bilateral giant AML, which is very rare, could be treated with conservative management if no significant hemorrhage occurred.

Keywords: *angiomyolipoma, tuberous sclerosis complex, conservative management.*

INTRODUCTION

Tuberous sclerosis complex (TSC) has several renal manifestations including angiomyolipomas (AML) and renal epithelial neoplasms.[1] AML occured in 0.3% of population and comprised 3% of the solid renal mass.[2] AML associated with TSC affects with greater frequency between second and third decade. The TSC is characterized by a clasical triad of epilepsy, mental retardation, and sebaceous adenoma.[3-5] Although AML of kidney is a benign lesion, it shows a rapid growth with a significant morbidity because of the the risk of rupture leading to profuse retroperitoneal bleeding.[6] The management is much dependent on tumor size.[7]

A bilateral giant renal angiomyolipoma is extremely rare. Six cases were published in previous papers which vary in tumor weight, from 3750 g until 5800 g, and treatment. We report a case of giant bilateral AML and discuss the diagnosis and treatment of this case.

CASE ILLUSTRATION

Male, 22 years old, was admitted to our hospital due to gross hematuria, left and right flank pain. The patient felt abdominal distention on his left and right abdomen one year before admission. The patient had a history of epilepsy, delayed development, and learning difficulties during childhood. Patient had a multiple papule and nodule on his face since 3 years old suggestive angiofibroma. There was no family history of TSC.

Physical examination revealed hypertension, tachycardia, and palpated bilateral mass in upper quadrant abdomen with costo-vertebral knocking pain. There were multiple hyper-pigmented papules and nodules on his face. Laboratory studies revealed anemia (Hb=7.2 g/dl), leukocytosis (white blood counts 14.300/ul), and blood creatinin of 1.6 mg/dl.

An abdominal CT showed right renal contour with multiple lobulated with heterogeneous density, -62 to 30 Hounsfield Unit (HU). Right pelviocalyx system did not clearly show. A large mass was filled the entire left abdomen with heterogeneous density, -78 to 60 HU. An abdominal MRI showed large lobulated heterogeneous mass with fatty content in entire left abdomen with volume of 15.2 x 17.1 x 30 cm in accordance with AML. A picture of normal left kidney did not exist. There were multiple lobulated heterogeneous masses with fatty content in right kidney in accordance with AML in right kidney. Two large masses in right kidney were at upper pole with volume of 8.2 x 5.4 x 5.2 (cm^3) and in lower pole with volume of 7.5 x 4.8 x 7.1(cm^3).

The patient was diagnosed with bilateral giant renal AML and TSC. We performed blood evacuation in the bladder and performed bladder irrigation with three-way foley catheter. The patient had blood transfusion with packed red cell (PRC) because of recurrent gross hematuria. A total 9 bag of PRC was transfused in 6 months of follow up. Arterial embolization or surgery was not performed because we considered the bilateral tumor in the patient kidney. Afterwards, the condition of the patient was stable with

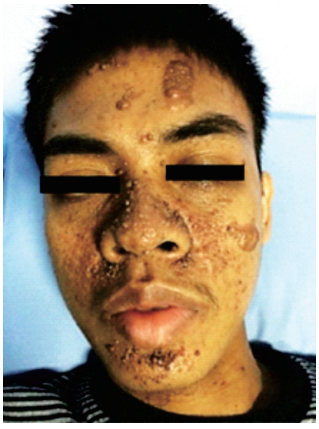

Figure 1. Facial angiofibroma

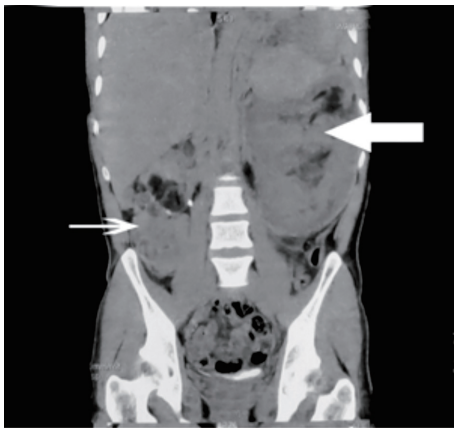

Figure 2. Abdominal CT shows fatty content in entire left abdomen (big arrow) and multilobulated fatty content in right kidney (small arrow)

no gross hematuria. However, if the bleeding continued and was very massive, we had planned to perform total nephrectomy on left kidney.

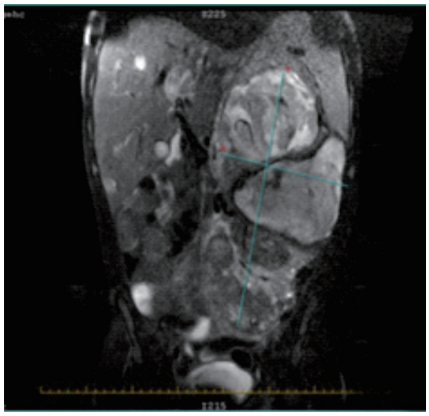

Figure 3. Abdominal MRI shows large lobulated fatty mass in entire lift abdomen

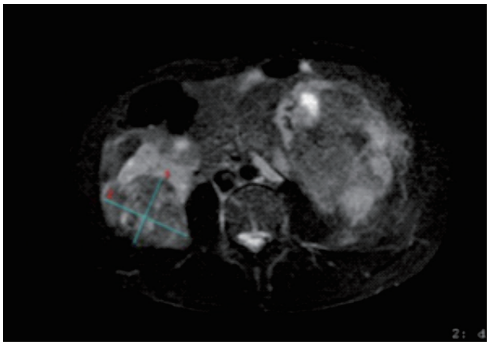

Figure 4. Fatty content in upper pole of the right kidney was showed on abdominal MRI

DISCUSSION

TSC is a congenital disease related to autosomal dominant that characterized by the presence of clasical Vogt's triad symptoms including intractable epilepsy, mental retardation, and facial angiobiromas.[3-5] However, less than 40% of affeted patients have all three feautures. Renal AMLs, cardiac rhabdomyomas, pancreatic cysts, fibroadenoma sebaceous, and brain nodules may be associated with TSC. The most common TSC manifestation is neurologic symptoms including 90% of patients experience seizures and about 50% of patients experience cognitive impairment, autism, and other behavioral disorders. The second most common of TSC manifestation is renal manifestation which is AML and renal cysct that found in 80% and 50% patients, respectively.[1] AML associated with TSC occurs more frequently as multiple lessions and grows to larger size than idiopathic AML and shows a significant higher likelihood of rupture causing a hemorrhagic shock secondary to hematuria or retroperitoneal bleeding. Hence, patients with AML without TSC, the tumor is generally asymptomatic and single.[6]

TSC is caused by mutations in either the TSC 1 gene located in chromosome 9 or TSC 2 gene located in chromosome 16. Children with TSC gene are born with normal kidney but they will develop renal cyst and AML as they age. Both renal cyst and AML can cause chronic kidney disease as leading cause of death in adult patients.[8] Mortality and morbidity of AML is associated with the risk of hemmorrhage and the invasion of the lession to adjacent normal renal parenchyma leading to chronic kidney disease and even end-stage renal disease.

Most AML are benign and asymptomatic unless the tumor size reaches 4 cm or more. Lenk's triad including flank pain (53%), a palpable tender mass (47%), and gross hematuria (23%) are a classic symptoms in patients with tumor size more than 4 cm.[9] Other posible symptoms and sign are hemorrhage, hematuria, palpable mass, nausea and vomiting, systemic arterial hypertension, anemia, fever, shock, and urinary tract infection.[10] Smaller lesions, defined as being less than 4 cm, can present with microhematuria or chronic mild flank pain. It is usually asymptomatic and often discovered accidentally by Ultrasonography or CT-Scan.[11] In our case, we found our patient with a huge tumor sized, more than 8 cm. Clinical manifestation was anemia due to gross hematuria. He had also flank pain, and palpable mass in left and right abdomen. Thus, our patient was diagnosed by TSC because the clasical Vogt's triad symptoms were present including hystory of epilepsi, mental retardation, and facial angiofibroma.

AML is the only benign renal tumor diagnosed on cross-sectional imaging. The presence of fat, confirmed by a negative attenuation values of -25 HU or less in CT, within a renal lesion is considered the diagnostic hallmark.[12] Findings of more than 20 pixels with attenuation -20 HU or less and of more than 5

pixels with attenuation less than -30 HU hava a 100% of positive predictive value. MRI can be used in difficult cases or with CT scan, with the findings of fat images are being sugestive of the diagnosis of AML.[13] Doubtful diagnosis persists in the case which there is little fat content in the tumor or the presence of previous bleeding which conceal the fat content. The CT of our patient suggests the heterogenous density from -78 to 60 HU. The presecence of -30 HU suggests 100% of predictive value for diagnosing the AML.

Management of the AML is very related to the clinical presentation, tumor size, single or multiple lessions, and potential of malignancy.[7] The asymptomatic patients treat with conservative management, with regular clinical and radiological follow up. For those patients with pain, heamorage, complex lessions, and enlarging tumors, nephorn sparing surgery and/or intra-arterial embolization are considered to have better outcome. Current recomendations are to obtain US at initial diagnosis and then every 1-3 years based on tumor burden.[14] Symptomatic tumors with tumor sized more 4 cm should undergo angiographic evaluation with either partial nephrectomy or arterial embolization. Asymptomatic tumors, sized more than 4 cm should repeat US or other imaging modalities every 6 months. Symptomatic tumors sized less than 4 cm should be observed for tumor resolution, but if no resolution is observed, partial nephrectomy or elective arterial embolization is the selected treatment. Asymptomatic tumor <4 cm should be monitored routinely every 1 to 3 years.[15,16] AML greater than 8 cm should be managed surgically for preventing the complications such as haemorage and rupture. However, if the tumors are bilateral, the option for treatment become a problem.

The principles of managemet for bilateral AML, which is a benign nature, are resolution of symptoms and prevention of fatal morbidity without comprising renal function.[17,18] Selective arterial embolization and/or nephron-sparing surgery are renal preserving modalities for the patients with bilateral tumor.[19] In patient with solitary kidney who suffering AML, selective arterial embolization is recomended. Hence, a risk for unexpected large ischemia should be considered when treating the tumor with multiple feeding arteries.[19,20] Nephron-sparing surgery preserves as much renal parenchyma as possible and therefore, these benign lesions should be treated with this method whenever possible.[19]

Huge bilateral renal angiomyolipoma is extremely rare. Six cases were reported with different tumor burden from 3200 g to 5800 gram and different modalities of treatment were applied based on the patient condition, tumor burden, and the prescence of acute hemorage. Shen et al[21] reported bilateral huge angiomyolipoma treated with unilateral nephrectomy. Cakan et al[22] reported a good result by doing bilateral nephorn-sparing surgery based on the characteristic of tumor which showed multiple lobulated tumor lessions in the both kidney. Katayama et al[23] performed unilateral nephrectomy folowed by routine hemodialysis because from imaging modalities showed internal haemorrhage. Hussain et al[24] reported bilateral nephrectomy with co-existing AML and renal cell carcinoma which is very rare. The patient was susbsequently transplanted and no reccurence or metasteses of rencal cell carcinoma in the follow-up. Kobayashi et al[25] reported a bilateral massive renal AML with hemorrhagic shock who underwent selective transarterial embolization followed by bilateral nephrectomy. The total tumor burden weighed 5800 g, making the largerst AML by weight in published reports. The postoperative course was uneventfull and permanent hemodialysis was attempted. Ciancio et al[26] reported a bilateral giant AML with acute hemorage in unilateral kidney treated with artery embolization and total nephrectomy. The contralateral tumor was removed with partial nephrectomy to preserve renal function.

Our patient was considered to have conservative management with routine follow up for the presence of significant hemorrhage. On the last follow up, no hemorrhage observed by ultrasonography in the both of kidney. We were neither considered arterial embolization nor surgery because the presence of bilateral tumor without significant hemorrhage. However, we plan to do nephrectomy in left kidney if significant hemorrhage is occured.

CONCLUSION

AML associated with TSC occurs more frequently as multiple lessions and grows larger size than idiopathic AML. Bilateral giant renal angiomyolipoma, which is very rare, can be treated with conservative management if no significant hemmorage occured.

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