ORIGINAL RESEARCH PAPER

Urology

WUNDERLICH'S SYNDROME IN A PATIENT WITH ADVANCED TUBEROUS SCLEROSIS COMPLEX WITH LARGE ANGIOMYOLIPOMA

KEY WORDS: Wunderlich's syndrome, angiomyolipoma, Tuberous sclerosis

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ABSTRACT

Wunderlich's syndrome, or spontaneous non-traumatic retroperitoneal hemorrhage, can be a life-threatening event. Renal angiomyolipoma is a rare benign tumor that can occur sporadically, or in association with tuberous sclerosis. A case of spontaneous retroperitoneal hemorrhage in a patient with tuberous sclerosis and renal angiomyolipoma is presented. Tuberous sclerosis complex is a rare symptom complex and may have varied presentations.We present a case of hypovolemic shock due to spontaneous rupture of large angiomyolipoma in a 24-year-old male patient with tuberous sclerosis complex (TSC).The hemodynamic instability of our patient leads to an urgent surgery and right nephrectomy was done for the angiomyolipomas. Spontaneous hemorrhage in renal angiomyolipoma in a case of tuberous sclerosis and management are discussed.

INTRODUCTION

Wunderlich's syndrome, a urological emergency, refers to spontaneous nontraumatic renal bleeding confined to the subcapsular and/or perinephric space.Various etiologies are of benign and malignant renal neoplasms, vascular disease (vasculitis, renal artery arteriosclerosis, and renal artery aneurysm rupture), nephritis, infections, undiagnosed hematological disorders, and anatomical lesions.The commonest cause is renal angiomyolipoma (AML).

Renal angiomyolipoma comprises 0.3% of all primary renal neoplasms [1]. Angiomyolipoma is a benign mixed mesenchymal tumor composed of varying proportions of abnormal vessels, immature smooth muscle cells, and adipose tissue [2, 3]. 80% of angiomyolipomas occur as isolated cases, with the remaining being associated with tuberous sclerosis [1, 3]. Angiomyolipomas associated with tuberous sclerosis are typically larger, bilateral or multifocal tumors, and occur in younger patients [3]. In comparison solitary angiomyolipomas usually occurs sporadically in the population, mainly in women in the fourth to fifth decade of life [3].

Tuberous sclerosis, is a rare genetic condition that occurs sporadically or as a familial form, and affects cellular differentiation and proliferation, which results in hamartomatous lesions in many organs, most commonly in the brain, heart, eyes, kidneys, skin, and lungs [1, 2]. The incidence of TSC is estimated as 1 in 5,000-10,000 live births [4]. TSC usually presents with neurologic disorders including seizures, mental retardation, autism, brain lesions [cortical tubers, sub-ependymal nodules (SEN)], and sub-ependymal giant-cell astrocytomas. TSC can also present with cardiac, pulmonary, renal, and ophthalmic findings such as angiomyolipomas (AML) of the kidneys and rhabdomyoma of the heart. There are several distinct dermatologic findings, including facial angiofibroma, shagreen patches, and hypomelanotic macules (Ash-Leaf spots). The prevalence of renal angiomyolipoma in patients with tuberous sclerosis is reported to be between 50–80%, which means that careful screening for the presence of renal tumors is advised in these patients [3,5].

A case of spontaneous retroperitoneal hemorrhage (Wunderlich's syndrome) in a patient with tuberous sclerosis and unilateral renal angiomyolipoma is described, which presented as an emergency and required nephrectomy finally. The diagnosis and management of these rare associations are discussed.

CASE REPORT

A 24-year-old man was admitted to the emergency department with sudden-onset right abdominal pain, hematuria. Haematuria was sudden onset, painless, gross total, intermittent, associated with intermittent passage of serpiginous clots for last 5 days. He had no history of trauma, surgery or bleeding diathesis except for a known medical history of seizure disorder since 5 years on medication.

On arrival, his vital signs were temperature of 37 degree Celsius, pulse rate of 120 per minute, respiratory rate of 24 per minute and blood pressure of 84/60 mmHg requiring aggressive volume resuscitation. Physical examination revealed solitary approximately 15 x 10 cm lump in the right lumbar region extending to right hypochondrium and right iliac fossa, firm, tender, smooth surface with well defined margins without any renal angle tenderness. Reddish brown butterfly shaped papular rash suggestive of facial angiofibroma found over the face (Fig 1).

Fig. 1: Classical picture of angiofibroma in a case of TSC

Laboratory investigations showed haemoglobin level (7 g/dl, leucocytosis), a serum creatinine level of 1.1 mg/dL.normal coagulation tests and urinalysis showed RBC of 8-10/hpf. A contrast-enhanced computed tomography (CT) of the abdomen (Figure 2A and B, coronal and axial views) demonstrated right sided solid renal mass containing heterogeneous fat density in the cortex arising from mid and lower pole measuring 162 mm x 98 mm x 90 mm, which was consistent with renal angiomyolipomas which was extending to right iliac fossa and right lumber region associated with a large crescentic ruptured perirenal hematoma extending into the renal fascia and compressing other retroperitoneal structures.

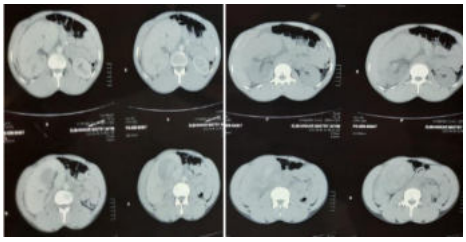

Fig 2A: Axial sections of Computed Tomogram showing right renal angiomyolipoma with perinephric haematoma

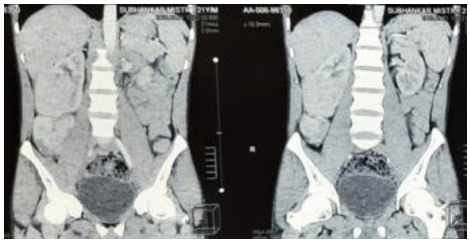

Fig 2B: Coronal sections of Computed Tomogram showing right renal angiomyolipoma with perinephric haematoma

The clinical and radiographic findings were diagnosed for Wunderlich syndrome resulting from an actively bleeding in a spontaneous ruptured renal angiomyolipoma causing hypovolemic shock.

Patient was initially managed conservatively. The patient responded to fluid resuscitation and was admitted to the hospital and packed red blood cells transfused but haematuria and pain was persisted. Angiographic embolization was not available, so urgent right sided nephrectomy was performed under general anesthesia for definitive control of the retroperitoneal hemorrhage. Macroscopic examination of the right nephrectomy specimen showed that the kidney was enlarged, measuring 18.0×10.0×9.0 cm and weighing 1,200 g. Histopathology of the excised renal tumor showed a benign neoplasm containing multiple tortuous thick walled blood vessels, smooth muscle and adipose tissue components (Fig. 3). The histological features were consistent with a diagnosis of a renal angiomyolipoma.

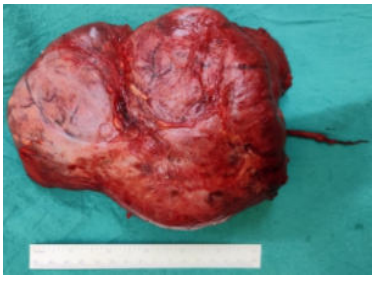

Fig. 3: Post operative specimen of right simple nephrectomy in a case of renal angiomyolipoma

During hospital stay MRI of brain performed which showed multiple sub ependymal nodule which was consistent with finding of patient of tuberous sclerosis complex patient (Fig 4). Following right nephrectomy, the patient recovered well. The patient was discharged from hospital on the 5th postoperative day.

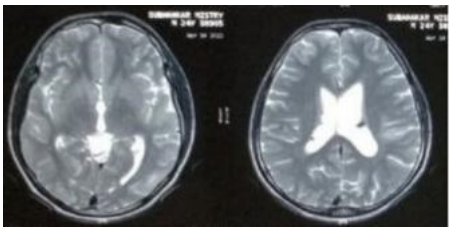

Fig. 4: Sub-ependymal nodules in the MR imaging of brain of our patient

DISCUSSION

Renal angiomyolipoma is a rare benign tumor with an incidence in the general population of 0.3% [1]. Most small tumors are asymptomatic. However, renal angiomyolipoma can cause abdominal or flank pain, a tender palpable mass, hematuria or other complications, including retroperitoneal hemorrhage [3].Wunderlich's syndrome, or spontaneous non-traumatic retroperitoneal hemorrhagecan present as a medical emergency and is one of the most common causes of mortality in patients with tuberous sclerosis [2,4].The clinical presentation of Wunderlich's syndrome depends on the degree and the duration of the bleeding [6].In this case report, the patient presented as an emergency, with life-threatening palpable mass ,hematuria, and hemorrhagic shock.Abdominal CT scan is considered the most sensitive imaging method to identify angiomyolipoma and its location and to identify complications, such as bleeding [7],can also identify variants of renal angiomyolipoma that contain little or no fat content.

AML size is directly correlated with the risk of spontaneous rupture which represents the most significant and feared complication in all forms. Large AML (>4 cm of diameter) develop micro and macro-aneurysms that can lead to spontaneous rupture. More recent evidence suggests that aneurysm size is more important than tumour size in determining risk of bleeding. Yamakado et al. demonstrated that the effect of aneurysm size on rupture was greater than that of tumor size.[8]

Because of the strong association with renal angiomyolipoma, patients with tuberous sclerosis who have no initial evidence of this renal tumor, are advised to have renal imaging at 2–3 yearly intervals, but if renal angiomyolipoma or other renal abnormalities are present, annual follow-up renal imaging is recommended [9] .Selective arterial embolization of the lesion should be considered especially in patients with tuberous sclerosis who may have limited nephritic reserve due to replacement of the renal parenchyma by multiple cysts and AMLs. But, patients who are haemodynamically unstable and refractory to resuscitation may require emergency surgery.

Most asymptomatic cases of renal angiomyolipoma that are small <4.0 cm in diameter can be managed conservatively[2].Management > 4 cm AML is more controversial but includes prophylactic vascular occlusive embolization in selected high-risk patients, who may be difficult to follow-up, or in young women who intend to get pregnant [10,11].However some studies have recommended that embolization techniques should be reserved for symptomatic patients because of its potential complications and procedural outcome failure, which may require repeat embolization [11,12].

In our case, duo to spontenous retroperitoneal hemorrhage from AML with unstable hemodynamic markers and the unavailability of angiographic embolization, the surgery was imperative and urgent which was done by a right nephrectomy as definitive and life-saving management.

CONCLUSION

This report has described a case of Wunderlich's syndrome, or spontaneous retroperitoneal hemorrhage, in a patient with tuberous sclerosis and unilateral renal angiomyolipoma, presenting as an emergency.Renal angiomyolipoma is a rare benign tumor, it may be associated or not to tuberose sclerosis disease.AMLs that are associated with TS are more likely to be larger and more prone to spontaneous retroperitoneal hemorrhage.WS duo to AMLs may be managed conservatively if the hemorrhage is self-limiting, but selective arterial embolization and even nephrectomy may be necessary as life saving procedure in cases of continued hemodynamic instability.Therefore, clinicians should consider the possibility of spontaneous bleeding from renal angiomyolipoma when a patient with previously diagnosed or suspicious of tuberous sclerosis presents as an emergency with abdominal pain and hypovolemic shock, to provide early diagnosis and life-saving treatment.

CONFLICT OF INTEREST: None

REFERENCES

[1] Redkar N, Patil MA, Dhakate T, Kolhe P: Tuberous sclerosis complex presenting as bilateral large renal angiomyolipomas. BMJ Case Reports, 2012;2012:bcr2012006412
[2] Shankar S, Hulikanthimatt KS, Awatti SM, Narayanrao ST: Bilateral multifocal renal angiomyolipoma associated with Wunderlich's syndrome in a tuberous sclerosis patient. J Clin Diagn Res, 2015; 9(8): ED01–3
[3] Wright T, Sooriakumaran P: Renal angiomyolipoma presenting with massive retroperitoneal hemorrhage due to deranged clotting factors: A case report. Cases J, 2008; 1: 213
[4] Hallett L, Foster T, Liu Z, Blieden M, Valentim J. (2011). Burden of disease and unmet needs in tuberous sclerosis complex with neurological manifestations: Systematic review. Curr Med Res Opin 27: 1571-1583.
[5] Chiarugi M, Martino MC, Pucciarelli M et al: Recurrent retroperitoneal hemorrhage in a patient with tuberous sclerosis complex: A case report. Cases J, 2008; 1: 424
[6] Vaddi SP, Reddy VP, Devraj R: Wunderlich's syndrome in a tuberous sclerosis patient. Indian J Surg, 2011
[7] Lai CC, Fan WC, Chao CM et al: Traumatic rupture of a renal angiomyolipoma. J Emerg Med, 2012; 43(5): e339–4
[8] Yamakado K, Tanaka N, Nakagawa T, Kobayashi S, Yanagawa M, Takeda K. Renal angiomyolipoma: relationships between tumor size, aneurysm formation, and rupture. Radiology. oct 2002;225(1):78–82.
[9] Krueger DA, Northrup H: Tuberous sclerosis complex surveillance and management: Recommendations of the 2012 International Tuberous Sclerosis Complex Consensus Conference. PediatrNeurol, 2013; 49(4): 255–65
[10] Bora A, Soni A, Sainani N, Patkar D: Emergency embolization of a bleeding renal angiomyolipoma using polyvinyl alcohol particles. DiagnIntervRadiol, 2007; 13: 213–16
[11] Gregory SM, Anderson CJ, Patel U: Radiofrequency ablation of large renal angiomyolipoma: Median-term follow-up. Cardiovasc InterventRadiol, 2013; 36: 682–89
[12] Danforth TL, Lane BR, Novick AC: Conservative management of giant symptomatic angiomyolipomas in patients with tuberous sclerosis complex. BJU Int, 2007; 100(4): 794–97