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Tuberous Sclerosis with Bilateral RenalAngiomyolipoma

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Abstract

Tuberous sclerosis is 2nd most common neurocutaneous syndrome. Bilateral renal angiomyolipoma in tuberous sclerosis is a rare entity. Reporting two cases of tuberous sclerosis with bilateral renal angiomyolipomas.

Introduction

Neurocutaneous syndromes are disorders of central nervous system that additionally result in lesions on the skin and the retina. These tissues have a common ectodermal origin. Common types being Neurofibromatosis (commonest), Tuberous sclerosis, Ataxia telangiectasia, Sturge-Weber syndrome, von Hippel-Lindau disease. Tuberous Sclerosis (TSC) is the second most common neurocutaneous disease. It is inherited as autosomal dominant disease. It is characterised by triad of Mental retardation, Adenoma sebaceum, and Seizures.¹

Case 1

Presentation

A 30 years old lady presented with backache, fever and cough of one month duration to the orthopaedics dept. Patient had some skin lesions on the face since birth and was mentally retarded. She gave history of multiple seizures in past. She was



Fig. 1 : Chest X-ray showing lung mass in right upper zone



Fig. 2 : CT abdomen showing bilateral renal angiomyolipomas

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On Examination

Her vitals were stable; no other skin lesions could be identified. Systemic examination was unremarkable except for the profound mental retardation.

Investigations

Chest X-RAY showed lung mass in right upper zone (Figure 1).

CT Thorax suggested it to be multiple hamartomas.

CT Abdomen revealed Bilateral Renal Angiomyolipomas (Figure 2).

CT Brain showed subependymal nodules and cortical tubers (Figure 3).

A diagnosis of Tuberous sclerosis was made.

Case 2

A young lady aged 21 years, MBA student, who had received state level awards for her talents in music (normal mentation) presented with lower abdominal pain and hematuria of 1 month duration. She had h/o seizures in childhood for which she took carbamazepine for few months and then stopped on her own. She had normal menstrual cycles. No history of previous hospital admissions.

On examination

Presentation

Her vitals were stable. She had multiple skin lesions on face (adenoma sebaceum) (Figure 4). No other skin lesions could be identified.

Systemic examination was unremarkable except for the right lumbar tenderness. And her mental status was normal.

Investigations

Routine lab tests were normal.

ECG was within normal limits and Chest X-Ray was normal.

- CT Brain showed subependymal nodules (Figure 5).
- CT Abdomen showed Bilateral Renal Angiomyolipomas



Fig. 3 : CT brain showing subependymal nodules and cortical tubers



Fig. 4 : Case 2 – A 21 year old girl with adenoma sebaceum



Fig. 5 : CT brain showing subependymal nodules



Fig. 6 : CT abdomen showing bilateral renal angiomyolipomas (Figure 6).

A diagnosis of Tuberous sclerosis was made.

Discussion

Tuberous sclerosis or tuberous sclerosis complex (TSC) is a rare, multi-system genetic disease³ that causes benign tumours to grow in the brain, spinal cord and on other vital organs such as the kidneys, heart, eyes, lungs, and skin. These tubers were first described by *Désiré-Magloire Bourneville* in 1880; the cortical manifestations may sometimes still be known by the eponym *Bourneville's disease*. Tuberous sclerosis occurs in all races and



Fig. 7 : Close up picture of adenoma sebaceum



Fig. 8 : This figures shows ash leaf macule

ethnic groups, and in both genders. The live-birth prevalence is estimated to be between 10 and 16 cases per 100,000.¹ A thorough clinical examination can lead to high index of clinical suspicion. Dermatological manifestations could be the prime leaders in diagnostic agenda. Some form of dermatological sign will be present in 96% of individuals with TSC; and one should be well versed with them.

Facial Angiofibromas ("adenoma sebaceum"): (Figure 7)

These are rashes of reddish spots or bumps, which appear on the nose and cheeks in a butterfly distribution. They consist of blood vessels and fibrous tissue.

Ungual or Subungual Fibromas

Also known as *Koenen's tumors*, these are small fleshy tumors that grow around and under the toenails or fingernails and may need to be surgically removed if they enlarge or cause bleeding.

Hypomelanic Macules ("ash leaf spots"): (Figure 8)

White or lighter patches of skin that may appear anywhere on the body and are caused by a lack of melanin. These are usually the only visible sign of TSC at birth.



Fig. 9 : Shagren patches



Fig. 10 : Angiomyolipoma – histopatholoigal appearance

Shagreen Patches: (Figure 9)

Areas of thick leathery skin that are dimpled like an orange peel, usually found on the lower back or nape of the neck.

Kidneys

Between 60 and 80% of TSC patients have benign tumors (hamartomas) of the kidneys called *angiomyolipomas* (AML) (Figure 10) frequently causing hematuria.

These tumors are composed of vascular tissue (angio–), smooth muscle (–myo–), and fat (–lipoma). Although benign, an AML larger than 4 cm is at risk for a potentially catastrophic hemorrhage either spontaneously or with minimal trauma.

AMLs are found in about 1 in 300 people without TSC. However those are usually solitary, whereas in TSC they are commonly multiple and bilateral.⁵

Approximately 20-30% of people with TSC will have renal cysts, causing few problems. However, 2% may also have autosomal dominant polycystic kidney disease.

Very rare (<1%) problems include renal cell carcinoma.

Other Systems

In Central nervous system About 50% of people with TSC have learning difficulties ranging from mild to profound, and autism.² Three type of brain tumours may be associated with TSC: Giant Cell Astrocytoma, Cortical Tubers, Sub-Ependymal Nodules.⁴

In Respiratory system patients with TSC can develop progressive replacement of the lung parenchyma with multiple cysts. This process is identical to another disease called *lymphangio-leio-myomatosis* (LAM)⁷ (Figure 11). Recent genetic



Fig. 11 : CT Thorax showing lymphangio-leio-myomatosis (LAM)

analysis has shown that the proliferative bronchiolar smooth muscle in tuberous sclerosis-related LAM is monoclonal metastasis from a coexisting renal angiomyolipoma.

In Cardiovascular system rhabdomyomas are common which are benign tumors of striated muscle. A cardiac rhabdomyoma can be discovered using echocardiography in approximately 50% of people with TSC.

Retinal lesions, called *astrocytic hamartomas* (or "phakomas"), which appear as a greyish or yellowish-white lesion in the back of the globe on the ophthalmic examination are also seen.

Management and Prognosis

Drug therapy for some of the manifestations of TSC is currently in the developmental stage. The patients usually have relapse of symptoms in the clinical course. Unless any vital function is affected, life expectancy is good. Majority of patients will require some medications to control symptoms, e.g. antiepileptics to control seizures.⁶

The prognosis for individuals with TSC depends on the severity of symptoms; those individuals with mild symptoms generally do well and live long productive lives, while individuals with the more severe form may have serious disabilities.

Leading causes of death include renal disease, brain tumour, lymphangiomyomatosis of the lung, and status epilepticus or bronchopneumonia in those with severe mental handicap.

Kidney complications such as angiomyolipoma (AML) and cysts are common, and more frequent in females than males and in TSC2 than TSC1. Renal cell carcinoma is uncommon. Lymphangioleiomyomatosis (LAM) is only a risk for females with AMLs.

Conclusions

Two cases of tuberous sclerosis were studied and both of them had bilateral renal angiomyolipoma's.

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