

Tuberous Sclerosis with Rhabdomyoma in Both the Monozygotic Twins: A Case Report

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Abstract: Tuberous sclerosis is a neuro-cutaneous syndrome characterized by abnormalities of both the integument and central nervous system. We present a case of tuberous sclerosis with rhabdomyoma present in monozygotic twins. These were 1.5 year old male monozygotic twins with multiple seizures and rhabdomyoma in heart. Magnetic resonance imaging brain and 2D ECHO findings were consistent with diagnosis.

Keywords – tuberous sclerosis, monozygotic twins, rhabdomyoma

I. Introduction

Tuberous sclerosis complex (TSC) is an autosomal dominant neurocutaneous syndrome with a high incidence of sporadic cases and variable clinical expression.[1,2,3] It has an estimated frequency of 1/6000.[1,4] Major manifestations of TSC include skin lesions in more than 95%, autism and seizures in 85%, kidney disease in 60%, mental retardation in 50%, and cardiac rhabdomyoma in 50%.[3] Mental retardation and autism are more in TSC patients who presents with generalized seizures including infantile spasms in the first 2 years of life.[1,2,3]. We present you 1.5 year old male monozygotic twins with multiple seizures and rhabdomyoma in heart. Magnetic resonance imaging brain and electro-encephalography findings were consistent with diagnosis.

II. Case Report

The case of monozygotic male twins of 1.5yr born out of non consanguinous marriage were brought to our setup with c/o multiple episodes of convulsions (1 epi per day). It was generalized tonic clonic each lasting for 10-15 sec. There was no post ictal drowsiness/loss of consciousness/focal neurological deficit/ altered sensorium/fever/vomiting. Vision and hearing were preserved. The other twin had nonspecific complaints like decreases appetite, but there were apparent signs of mental retardation and delayed neurological milestones.

On Examination:

Twin one revealed pallor, shagreen patch on lumbo-sacral region, multiple hypo-pigmented patches (3 on the face, 1 each on right thigh and trunk) , angiofibroma on the forehead. vitals stable and no neurological or any other systemic findings.

Twin two revealed severe pallor, 3 hypopigmented patches on the face, ash leaf macule on the abdomen. No neurological or any other systemic abnormal findings elicited. vitals were stable.

Lab examination: Of both the twins revealed similar findings - CBC and PBS revealed microcytic hypochromic anemia, CSF findings were in the normal range, MRI revealed , a) Multiple minimally enhancing Subependymal nodules along lateral wall of body of lateral ventricles, b) Hyperintensity on T2, multiple patchy areas of altered signals on Grey and White matter s/o Cortical tubers. 2D ECHO revealed Multiple small left ventricular tumours s/o Rhabdomyomas on both the twins. USG ABDOMEN , ECG and EEG were normal.

During the hospital stay the twin one was found to have multiple convulsions, hence was promptly started on Anti-convulsant drugs were started. The parents history and examination revealed no signs of Tuberous sclerosis or any other neurological illness. Hence based on the criteria , a diagnosis of tuberous sclerosis was made. The patient was conservatively managed. On follow up the child is seizure free.

III. Discussion

Tuberous sclerosis complex (TSC) is an autosomal dominant neurocutaneous syndrome with a high incidence of sporadic cases and variable clinical expression.[1,2,3] It has an estimated frequency of 1/6000.[1,4]

The first complete description of TSC was given by Bourneville in 1880.[4] TSC is a disorder of cellular differentiation and proliferation that can affect the brain, skin, kidneys, heart, and other organs. Abnormal neuronal migration plays a major additional role in neurological dysfunction.[1] Two genes responsible for TSC are TSC1 at chromosome 9q34 (hamartin) and TSC2 on 16p13.3 (tuberin).[1,4,5] Diagnostic criteria include major and minor features.

Major features

Facial angiofibroma or forehead plaques.

Non-traumatic unguis or periungual fibroma.

Shagreen patch (connective tissue nevis).
Multiple retinal nodular hamartomas.
Cortical tuber.
Subependymal nodule.
Subependymal giant cell astrocytoma.
Cardiac rhabdomyoma, single or multiple.
Angiomyolipoma.

Minor features

Multiple randomly distributed pits in dental enamel.
Hamartomatous polyps.
Bone cysts.
Cerebral white matter radial migration lines.
Gingival fibromas.
Non-renal hamartoma.
Retinal achromic patch.
"Confetti" skin lesions.
Multiple renal cysts.

Diagnosis of TSC is established when two major features or one major plus two minor features can be demonstrated (TSC Consensus Conference, 1998).[1,2,4,5]

Fig 1 and fig 2 showing multiple cortical tubers in MRI BRAIN of twin 1 and twin 2.

Fig 3 and fig 4 suggests rhabdomyoma on both the 2d echo of twi 1 and twin 2.

Fig 4 suggests presence of ash leaf macuoles on both twin 1 and 2. Fig 5 suggests presence of shagreen patch on one of the twins.

TSC consists predominantly of Hamartomas occurring through out the Body- brain, bones, skin and viscera. Virtually all the patients have brain involvement which maybe identified in the neonatal period".

.Our patients presented with classical skin lesions like multiple hypo pigmented patches including Ash leaf macuoles that have the incidence of more than 90% in early childhood TSC. ". The patient also presented with shagreen patch which are essentially roughened raised edge lesions with orange peel consistency located primarily on the lumbosacral region. However there were no lesions on Kidneys or Retinas which are also a common occurrence in tuberous sclerosis. MRI Brain of both twins revealed classical findings of TSC - Subependymal nodules and Cortical tubers. The rhabdomyoma is the most common cardiac tumor of infancy and prenatal life, constituting 89% of fetal cardiac tumors in one series.[6]. Recent two-dimensional (2D) ECHO studies have reported that 50% of the patients with TSC have cardiac rhabdomyomas. Incidence of tuberous sclerosis is as high as 59-80% in patients with confirmed fetal rhabdomyomas[7]. The association of TSC with multiple cardiac rhabdomyomas is even higher, such that its detection is now sufficient to diagnose TSC, according to the 1992 diagnostic criteria for TSC[8]. The ability to detect cardiac rhabdomyomas prenatally, as early as 20 weeks of gestation, makes determination of the frequency of association with TSC important from the standpoint of pregnancy management and genetic counseling. It has been suggested that management of cardiac rhabdomyomas in fetuses and infants should be conservative and expectant. Whereas prior autopsy series of patients with cardiac rhabdomyomas demonstrate a poor prognosis, more recent echocardiographic studies report a better outcome.[6,9,10] Recently it has been shown that most cardiac rhabdomyomas regress over time, with the most rapid rate occurring early in life.[10]

We report the suspected case of Tuberous Sclerosis with rhabdomyoma in both the monozygotic twins. The occurrence in both the twins of monozygotic gestation is inconsistent with the genetic theory of autosomal dominant transmission. Hence the occurrence is likely due to the spontaneous mutation owing to the lack of Familial history of tuberous sclerosis. The twins have been advised Genetic studies and regular follow up.

IV. Figures

Fig 1 and fig 2 are MRI brain of twin 1 and 2 suggesting presence of cortical tubers

Fig 3 and 4 are 2d ECHO of twin 1 and 2 suggestive of RHABDOMYOMA

Fig 5 6 7 are clinical pictures of both twin 1 and 2 showing ash leaf macuoles and shagreen patch.



V. Conclusion

The monozygotic twins who present with signs and symptoms suggestive of Tuberous sclerosis should also be evaluated for cardiac Rhabdomyomas apart from other standard investigations like MRI, USG ABDOMEN AND EEG atleast once every 3 years . Diagnosed cases of TSC should be followed up with Neuro developmental testing along with Radiological examinations to check for Regressions.

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