Document heading doi: 10.21276/apjhs.2019.6.2.17 **Case Report**

Case report on tuberous sclerosis

Mohit Bajaj[1], Swati Mahajan[2*], Rattan Sagar[3], Amit Kumar[4]

[1]MD Pediatrics, Regional Hospital, Kullu, Himachal Pradesh, India
[2]MD Medicine, Regional Hospital, Kullu, Himachal Pradesh, India
[3]MD Dermatology, Regional Hospital, Kullu, Himachal Pradesh, India
[4]MD Radiology, Regional Hospital, Kullu, Himachal Pradesh, India

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Abstract
Tuberous Sclerosis Complex is a rare genetic disorder inherited in autosomal dominant fashion. Tuberous Sclerosis Complex or Bourneville's disease, first described by Desiree Magloire Bourneville in 1880 has a prevalence of 1 in 6000 live birth.. It is a multisystem disorder involving brain, skin, kidneys, heart, eyes and lungs which becomes apparent only in late childhood, limiting the usefulness in early diagnosis in infancy .Here we report a case of 9 year old female child presenting with chief complaints of skin lesions, developmental delay and seizures in Regional Hospital, Kullu and diagnosed as Tuberous Sclerosis.
Keywords: Adenoma sebaceum, Seizure, Shagreen Patch, Tuberous Sclerosis.

Introduction

Case report

History: A 9 year old female child from a nearby village presented in pediatric OPD with multiple skin lesions over face and chest present since infancy. Parents had taken medications from multiple practitioners but skin lesions persisted. She gave history of multiple episodes of abnormal body movements for past 3 years suggestive of right sided focal seizures which had resolved spontaneously for past one year without any medication and had one episode just before visit. She was born of non consanguineous marriage with uneventful birth history. There was no history of seizure in family members; however his father had skin nodules over the face and neck along with a hypopigmented macule over the trunk.

Examination: On detailed examination, the child was found to be malnourished (Protein energy malnutrition Grade II as per Indian Academy of Paediatrics Classification based on weight for age) with Tanner stage I of physical development. The child had multiple hyper-pigmented papules over the malar region (adenoma sebaceum) and forehead. She also had multiple (five) hypo-pigmented macules (ash leaf) over the chest and lower limbs along with a Shagreen patch over the lateral aspect of the left buttock. She had mild mental retardation, rest of detailed CNS examination was normal. Systemic examination and fundus examination revealed no abnormality.

Investigations: showed sub ependymal nodules in computed tomography (CT) scan of head. Blood investigations test complete haemogram, serum calcium, renal and liver function tests were normal. Ultrasound KUB was normal. X-ray of both hands was normal.

Management: Anti epileptic Carbamazapine (15 mg/kg/day) was started for seizure management and currently the child is seizure free for past 6 months on medication.

Discussion

Tuberous sclerosis complex (TSC) is a rare genetic disorder with heterogeneous presentation varying from severe mental retardation and incapacitating seizures to normal intelligence and an absence of seizure, often within the same family. It is due to inactivating mutation in one of the two genes, TSC1 encoding hamartin, or TSC2 encoding tuberin[1,2] .The major neurological manifestations of Tuberous Sclerosis Complex are seizures, autism, developmental delay and behavioral and psychiatric disorder. Seizure is present in about 80-90% of patient which begins during the

*Correspondence
Dr. Swati Mahajan
MD Medicine, Regional Hospital, Kullu, Himachal Pradesh, India
E-Mail: mahajanswati95@rediff.com

first year of life; varies from subtle focal seizure, infantile spasm, to generalized seizure[1,3].. Seizures are managed with an anticonvulsant medication like Vigabatrin for infantile spasm, Lamotrigine for generalized seizure[2]. But young children with TSC who have early onset of focal seizure or spasm, develops intractable seizures later that responds poorly to antiepileptic drug[1] . Those are candidates for alternative non-pharmacological treatment which includes vagus nerve stimulation, use of ketogenic diet, and resective surgery[4].TSC has dermatologic manifestations like hypomelanotic macules(90%), facial angiofibromas (75%), Shagreen patch (20-30%)[2] .

1. Hypomelanotic macules are present at birth and almost all lesions are evident within the first two years of life.
2. Facial angiofibromas (adenoma sebaceum) are present during preschool years(3-6yrs) in the malar area as small pink to red dome-shaped papules in a "butterfly distribution".
3. The Shagreen patch is found in the lumbosacral region characteristically present as an irregularly shaped roughened raised lesion with orange peel consistency.

Adolescent pediatric children may have cosmetic issues, so recent trial support the use of topical 0.1% Rapamycin on facial angiofibromas[5] . Use of Inhibitors of the mammalian target of rapamycin (mTOR) in regression of astrocytomas, angiofibromas and angiomyoliomas are newer modalities in the management of tuberous sclerosis[6]. Diagnostic Criteria for TSC is as given in the table below. Definite TSC can be made when two major or one major plus two minor features are demonstrated[7].Our patient had four major criteria (subependymal nodules in CT scan head, facial angiofibroma, hypomelanotic macules more than three in number, Shagreen patch) which fit in the diagnosis of Tuberous sclerosis.

Table1:Major and minor symptoms

Major	Minor
Facial angiofibroma	Multiple pits in dental enamel
Ungual fibroma	Hamartomatous rectal polyps
Shagreen patch	Bone cysts
Hypomelanotic macule	Cerebral white matter radial migration line
Cortical tuber	Gingivial fibromas
Subependymalnodule	Retinal achromic patch
Subependymal giant-cell tumour	Confetti skin lesions
Retinal hamartoma	Multiple renal cysts
Cardiac rhabdomyoma	
Renalangiomyolipoma	
Lymphangiomyomatosis	

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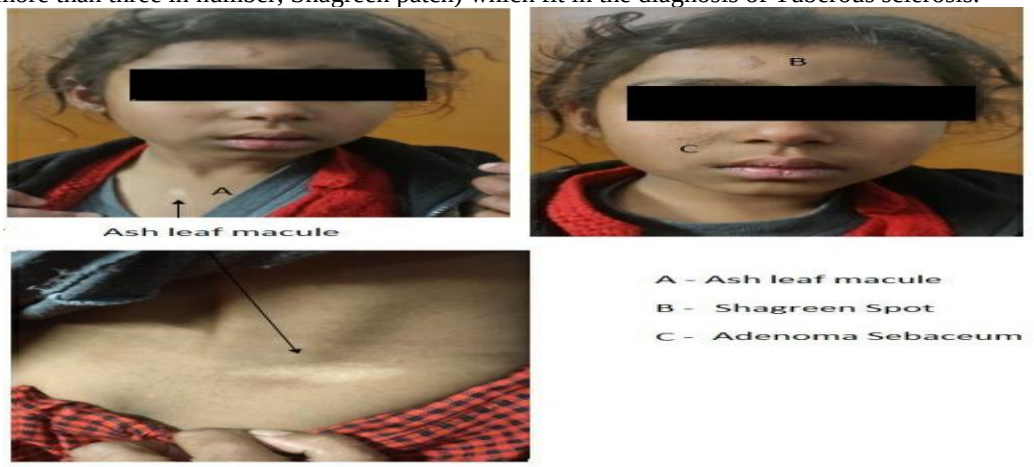

Fig 1:Ash leaf macule,shagreen spot,adenoma sebaceum

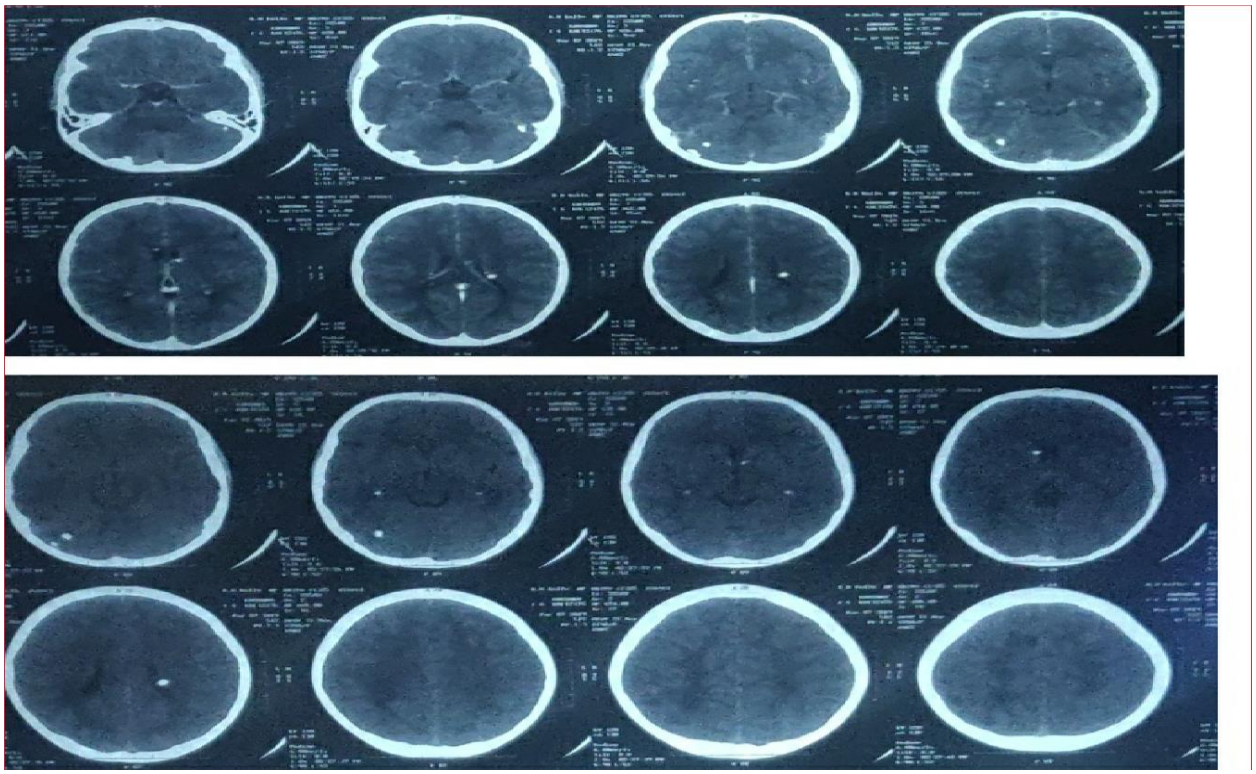

Fig 2:CECT brain showing multiple small subcentimeter sized calcified subependymal nodules along bilateral lateral ventricles,bilateral hemispherica cortex and bilateral fronto parietal region

Conclusion

TSC is one of the neurocutaneous syndromes inherited in autosomal dominant fashion with almost complete penetrance with variable expressivity, affecting almost all organs. The quality of life depends on the neurological manifestation like seizures and mental retardation which is improved by multidisciplinary approach and symptomatic organ specific treatment. Clinical diagnosis complementing with DNA testing allows precise genetic counseling, which is important.

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