Odontogenic myxofibroma of gingiva in a pediatric patient with tuberous sclerosis: A rare case report

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Abstract

Tuberous sclerosis complex (TSC) is a rare multisystem genetic disease, with an estimated incidence of 1 in 6000–1 in 10,000. TSC is an autosomal dominant syndrome involving heart, kidneys, lungs, and skin. The classic triad of TSC is seizures, mental retardation, and angiofibromas; this triad occurs in only 29% of patients. The clinical diagnostic guidelines on TSC are prepared based on clinical features, radiographic findings. The most common oral manifestations of TSC are fibroma, gingival hyperplasia, and enamel hypoplasia. Odontogenic myxofibroma represents a rare slow-growing benign neoplasm found rarely in children below 10 years or adults over 50 years of age. The prevalence of myxoma is between 0.04% and 3.7%. Here, we are reporting a rare case of myxofibroma of gingiva in an 8-year-old female TSC patient.

Keywords: Angiofibromas, gingival enlargement, odontogenic myxofibroma, tuberous sclerosis

Introduction

Tuberous sclerosis complex (TSC) is a rare multisystem autosomal dominant syndrome, shows hamartomas of the brain, heart, kidneys, lungs, and skin. The estimated incidence is 1 in 6000–1 in 10000. It is caused by defects or mutations in either TSC1 or TSC2 tumor suppressor gene. Gene products of TSC1 (hamartin) and TSC2 (tuberin) form a physical and functional complex and inhibit the mammalian target of rapamycin complex 1 signaling and spontaneous mutations seen in 60%–70% cases.[1,2]

The classic triad of TSC is seizures, mental retardation, and angiofibromas, seen in only 29% cases.[1] However, skin involvement is cardinal for suspecting the diagnosis of TSC, i.e., angiofibromas on the face and forehead (butterfly pattern). The most important neurological problems are mental retardation, seizures, autism, and learning difficulties. The most common oral manifestations of TSC are fibroma, gingival hyperplasia, and enamel hypoplasia.

Odontogenic myxofibroma represents a rare slow-growing benign neoplasm, usually occurring in the second-third decades of life, rarely in children below 10 years or adults over 50 years of age. The prevalence of myxofibroma is 0.04%–3.7%.[3] Here, we are reporting a case of myxofibroma of gingiva in an 8-year-old female TSC patient.

Case Report

An 8-year-old female reported with a chief complaint of generalized gingival growth for 4 years. She was the only child of her parents with negative family history. The patient was having a history of seizures since 3 years of age and under tablet Eptoin 150 mg daily till date she reported to us. Her distant eyesight was weak for which she was using spectacles.

She had multiple brown well-defined round-oval brown firm papules over the right face and bridge of the nose that gradually spreading to other side of face with no pain, bleeding, itching of lesions. Few leaf-like hypopigmented patches (ash-leaf spots) were present over forehead [Figure 1a]. Shagreen patch was present over the lateral side of neck [Figure 1b]. Multiple whitish macules on the

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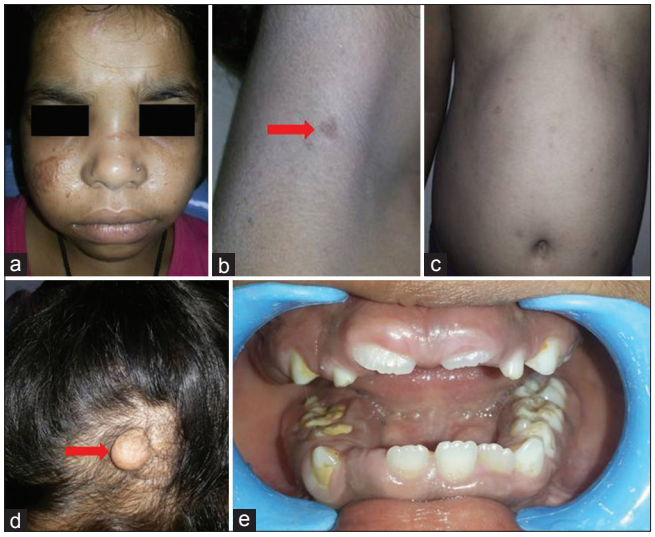

Figure 1: Clinical photograph of patient showing (a) angiofibromas over malar region, hypopigmented ash-leaf spots over forehead (b) shagreen patch over the lateral side of neck (c) confetti skin lesions over trunk (d) sessile tuber present over posterior portion of head surrounded by zone of alopecia (e) generalised gingival enlargement covering 2/3rd of anatomical crowns of teeth and multiple hypoplastic teeth, midline diastemas

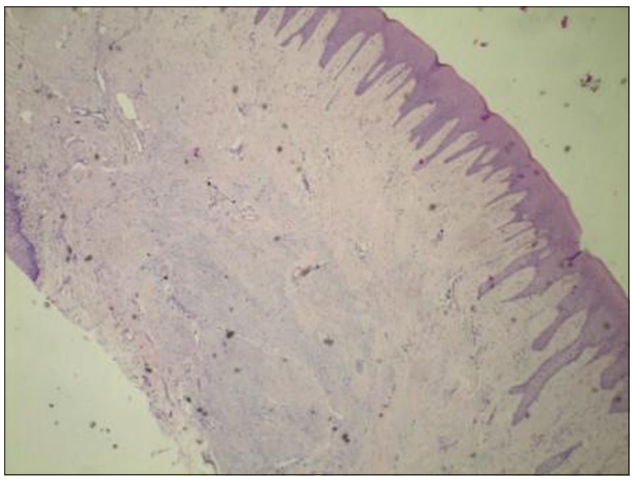

Figure 3: A hematoxylin and eosin-stained section showed parakeratinized stratified squamous epithelium with long and narrow rete ridges and hyperplasia at one end, irregular and dense plump to spindle-shaped fibroblasts in connective tissue. Many areas of stroma showed myxomatous degeneration. Small quiescent islands of odontogenic epithelium with clear cell changes were observed

front and back of the trunk were presented suggestive of confetti skin lesions [Figure 1c]. A single, well-defined soft to firm sessile tuber was present over posterior portion of the head surrounded by zone of alopecia [Figure 1d]. Periungual fibromas were absent in this patient.

Intraorally generalized gingival enlargement covering 2/3rd of clinical crowns of all teeth was present. Mixed

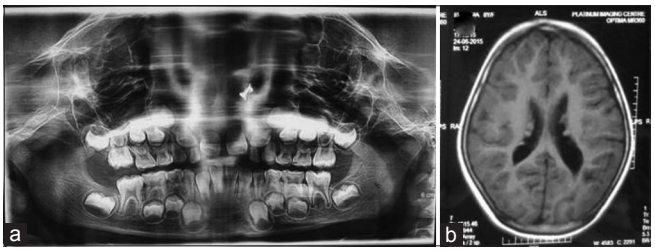

Figure 2: Radiological examination showing (a) orthopantomogram with no bone involvement (b) magnetic resonance imaging sections reveal multiple cortical tubers, white matter lesions, multiple subependymal nodules

dentition with erupting maxillary central incisors, enamel pitting, and midline diastemas were present. On palpation, gingival enlargement was firm, fibrous, and nontender [Figure 1e].

Panoramic radiograph revealed mixed dentition stage with developing multiple permanent teeth and no bone involvement. Magnetic resonance imaging (MRI) of the brain revealed multiple cortical tubers and white matter lesions, multiple subependymal nodules, marked diffuse cerebellar atrophy [Figure 2a and b].

Routine blood investigations were within normal physiologic range. Serum phenytoin levels of the patient were raised above normal limits (>40 μg/ml). An incisional biopsy of fibrous growth was performed to rule out phenytoin-induced gingival enlargement. A hematoxylin and eosin-stained sections were suggestive of odontogenic myxofibroma [Figure 3].

Discussion

Diagnosis of TSC is based on careful clinical examination in combination with computed tomography or MRI of the brain and an ultrasound of heart, liver, kidneys. One must be aware that all diagnostic features are age-dependent and are helpful in diagnosis.[4]

TSC was previously known as Bourneville disease, Pringle disease, and epiloia.[5,6] It is more common in females and usually diagnosed between 4 and 10 years of age or in puberty.[2] TSC can be diagnosed on the basis of clinical features (major and minor characteristics) and some investigations.[7] A definite diagnosis requires two major features or one major and two minor features; probable diagnosis requires one major and one minor feature [Table 1].[4]

Based on these criteria, five positive major characteristics in patient were facial angiofibromas, hypomelanotic maculae, shagreen patch, cortical tubercle, subependymal nodule, and three positive minor characteristics were multiple randomly distributed pits in dental enamel, gingival fibromas, confetti skin lesions. Thus, definite diagnosis of tuberous sclerosis was made.

Table 1: Diagnostic criteria for tuberous sclerosis complex patients

Major characteristics	Minor characteristics
Facial angiofibromas	Multiple randomly distributed pits in dental enamel
Multiple ungual fibromas (Koenen tumors)	Hamartomatous rectal polyps
Hypomelanocytic maculae	Bone cysts
Shagreen patch (connective tissue naevus)	Cerebral white matter radial migration lines
Cortical tubercle	Gingival fibromas
Subependymal nodule	Nonrenal hamartomas
Multiple astrocytomas	Retinal achromic patch
Cardiac rhabdomyoma (single or multiple)	Confetti skin lesions
Renal angiolipomas	Multiple renal cysts
Retinal hamartomas	Skin tags
	Positive family history in a first-degree relative

Neurologic manifestations are the leading cause of morbidity and mortality in TSC. Brain hamartomas are often responsible for intractable seizures (90%–96% of patients).[7] MRI of the brain in present case revealed neurological involvement. The patient was under antiepileptic drugs for seizures but no mental retardation. In our case, the antiepileptic drug doses were modified because of raised serum phenytoin levels and advised to gradually taper down dose of tablet eptoin 150 mg and start with tablet vigabatrin 250 mg twice daily.

Renal, pulmonary manifestations, and cardiovascular features are strongly associated with TSC; however, in our case, there was no such association.[8] 40%–50% of TSC patients shows retinal hamartomas with no visual dysfunction.[4] However, in our case, although the patient was not diagnosed with retinal hamartomas, her distant vision was affected.

According to Sparling *et al*., attached gingiva is the most common site for oral fibromas (40%) followed by interdental gingiva, buccal mucosa, labial mucosa, labial frenum, hard palate, tongue while gingival overgrowth in only 7% patients and dental pits in 97% patients.[9] In our case, generalized gingival overgrowth (rare finding) as well dental pits were present. Although gingival enlargement can be associated with multiple factors including inflammation, hormonal, drug use, neoplasm, genetic, systemic, and idiopathic,[10] gingival enlargement in the present case was due to odontogenic myxofibroma which is a rare finding in TSC cases.

Thoma and Goldman (1947) described odontogenic myxofibroma thought to be derived from the mesenchyme of a developing tooth or from the periodontal ligament. It exhibits slow and asymptomatic expansion, sometimes causes perforation of the cortical borders of the bone affected.[10] Hence, orthopantomogram was advised which showed no bone involvement in this case.

Growth assessment based on age, weight, and stature of the patient was normal for her age group. At present, the patient is under tablet vigabatrin 250 mg twice daily as maintenance protocol. Application of fluoride varnish in hypoplastic enamel pits was also performed and kept under periodic recall. As age advances, patients develop hamartomas of other organs; hence, these patients should be kept under observations. Every patient should be evaluated according to frequency and control of epileptic attacks. A multidisciplinary approach is required in the management of patients with TSC.

Conclusion

Early diagnosis of TSC with careful clinical and radiological findings is helpful in preventing serious complications of this disorder as it has a tendency to involve various body organs including oral cavity.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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