Parry Romberg Syndrome: The Socially Appalling Yet Less Acknowledged Diagnosis: Case Series and Literature Review

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ABSTRACT

The dilemma of facing a facial cosmetic issue at a young age is the most troublesome symptom hampering social well-being. Beginning in the teen ages and progressing to variable extents, Parry Romberg Syndrome (PRS) leads to facial asymmetry in the form of hemiatrophy secondary to loss of subcutaneous tissues, often fat but sometimes the underlying muscles and bones. It is indistinctly associated with seizure disorders at times or with other neurological sequelae. The first case was an 18 year old Pakistani male who presented with progressive wasting of the left side of the face for the past two and a half years. The second case was an 18-year-old Pakistani girl who presented to the neurology OPD with primary complaints of a seizure disorder for 3 years. In addition, she had progressive subtle asymmetry of her face. Over the course of time, a faint curvilinear grooved line showed up towards the right side of her forehead reaching on to her head up to the vertex. She also had hair loss ipsilateral to the line. The presentation of above cases depicts that although some features of PRS like facial asymmetry is characteristic, the presentation of a patient primarily with seizures should ideally include a thorough search for a secondary cause or of possible associations so that prognosis can be defined and appropriate interventions planned.

Keywords: Parry Romberg Syndrome; MRI Brain; Hemi-atrophy; Saber Tooth; Allogenic Surgery

INTRODUCTION

Parry-Romberg syndrome (PRS), also known as progressive facial hemiatrophy, is a rare, acquired, neurocutaneous syndrome of unknown etiology, with a higher incidence in females [1, 2]. Unilateral progressive atrophy of the face was first described by an English physician, Caleb Parry in 1825 and elaborated in 1846 by Moritz Romberg [3, 4]. However, it was Eulenberg in 1871 who gave the name ‘progressive facial hemiatrophy’ [5]. It is characterized by hemiatrophy of fat, skin, and connective tissue. Muscles and/or bones are also involved in some instances. Neurological manifestations are the most frequent, seen in nearly 15% of the patients. Most commonly, seizures occur and sometimes can be attributed directly to a brain abnormality visible on MRI [1]. Ocular involvement is also common, and the most frequent manifestation is enophthalmal [1, 6]. Moreover, this disease also overlaps with a condition known as linear scleroderma “en coup de sabre” [7-9]. The etiology of the disease is unidentified and there are no systematic studies to guide us but the most accepted theory is that it is an autoimmune condition [10].

CASE PRESENTATIONS

Case 1: Primary presentation: Appalling facial look: An 18 year old male presented with progressive wasting of the left side of the face for the past two and a half years. There was no accompanying history of pain, numbness, eye, joint or skin symptoms. There was no history of seizures or migraine headaches. Examination revealed left facial hemiatrophy with intact facial sensations. Cranial nerve examination was normal and no neurological deficit was noted.
upon limb examination (Figure 1).

Case 2: Primary presentation: Epilepsy/Seizures: An 18-year-old Pakistani woman presented to the neurology OPD with complaints of left sided focal uncomplicated seizures two to three times a week with the secondary generalization for the last 3 years. She also had progressive subtle asymmetry of her face. There was a hardly appreciable curvilinear grooved line towards the right side of her forehead encroaching on to her head up to the vertex. It had progressed with wasting of the right half of face along the periorbital margins extending a little bit on to the right cheek. She also had hair loss ipsilateral to the line. There was no similar illness in the family (Figure 2).

The differential diagnoses considered are mentioned in Table 1. A diagnosis of PRS was made for both cases. Complete blood count, liver function test, renal function test and urine routine examination were normal. Autoimmune workup, which included anti-nuclear antibodies (ANA), anti-double-stranded DNA antibodies (anti dsDNA antibodies), anti-centromere antibodies, anti-histone antibodies, cerebrospinal oligoclonal bands, anticardiolipin antibodies and rheumatoid arthritis factor were negative in both cases. Chest X-ray also appeared normal. Magnetic Resonance Imaging (MRI) of brain in the first case was normal. However, the MRI brain of the second case revealed right-sided periventricular lesion suggestive of leukoencephalomalacia (the possible focus of seizure discharge) (Figure 2).

The first case was managed with vitamin B-12 supplementation. He was given the option of corrective surgery but unfortunately, the patient could not go through it because of financial constraints. The second patient was put on anti-epileptics with good seizure control. She was counseled about the prognosis of the case and planned for surgery in due course of time on follow up visits to normalize the facial features considering the current trend of progression.

Figure 1: Case 1 with patient’s primary presentation of appalling facial look. MRI was normal.
DISCUSSION

PRS is an infrequent disease with poorly understood pathology. It involves progressive deformation of one half of the face, resulting in unilateral atrophy. PRS is associated with various systemic manifestations and variable presentations. Usually, the onset of the disease is in the first decade of life. However, there are reported cases of later onset as well. It is more common in females and is thought to be sporadic in nature, however, some have familial tendencies [2, 5, 9, 11-13]. Clinically, the syndrome is characterized by cutaneous manifestations involving dermatomes of one or multiple branches of the trigeminal nerve. Unilateral facial atrophy of the skin, soft tissues, muscles, and/or underlying bony structures is seen in variable combinations. Skin hyperpigmentation or depigmentation and at times alopecia may be observed. Around one-fourth of patients with facial hemiatrophy have a more definite vertical or diagonal “line” on their forehead as a result of cutaneous sclerosis; linear scleroderma en coup de sabre(LSCS). En coup de sabre is named in reference to the shape of the lesion as it looks like an injury caused by the sharp tooth of a “Sabre-Tooth Tiger/Lion”. There is a very close relationship between PRS and LSCS. In fact, differentiating PRS from LSCS is very challenging, as both conditions have a similar age of onset (mean age of 11-12 years), predominantly affect women and present with a similar type of lesions [13-15]. Oral involvement with ipsilateral hemiatrophy of the tongue may also occur. Neurological manifestations are the commonest and account for nearly 15% of PRS.

Table 1: Differential Diagnosis of Parry-Romberg Syndrome

<table>
<thead>
<tr>
<th>Disease/Condition/Syndrome</th>
<th>Differentiating feature</th>
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<tr>
<td>1 Hemifacial microsomia</td>
<td>First and second branchial arch syndrome: congenital and essentially non-progressive</td>
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<tr>
<td>2 Goldenhar syndrome</td>
<td>Variant of Hemifacial microsomia: congenital and essentially non-progressive</td>
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<tr>
<td>3 Partial lipodystrophy (Barraquer-Simon Syndrome)</td>
<td>Bilateral and primarily involves the adipose tissue</td>
</tr>
<tr>
<td>4 Parry-Romberg Syndrome</td>
<td>Autoimmune?: hemiatrophy; fat, soft tissue, bone involvement in variable combinations</td>
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patients. Seizures are the most common [16-19]. Other manifestations might include migraine headaches and trigeminal neuralgia, cerebral hemiatrophy, focal deficits like hemiplegia, limb atrophy, aneurysms and intracranial vascular malformations. Psychologically, the disfigurement is often the most debilitating symptom, particularly, since this is an acquired condition and facial dismemberment is a social stigma. Multiple ophthalmological manifestations are associated with PRS. These include enophthalmos, retinal vasculitis, third nerve paresis/ palsy, glaucoma and/ or eyelid atrophy. Nearly half the patients, diagnosed with PRS, also have dental anomalies. Teeth of affected side may present some deficiency in root development and, consequently, delayed eruption and dental crowding. Mandibular involvement may also be seen. However, final degree of deformity may depend upon the total duration of the disease [3, 6, 9, 12, 14, 15, 17, 19, 20].

The pathogenesis of PRS is not well understood. There are only a handful of cases reported worldwide. It seems to have a heterogeneous etiology; these include trauma, immune-mediated processes, infection, disturbance of fat metabolism, sympathetic dysfunction and cranial vascular malformation. The anatomical and physiological changes of PRS affect the growth potential of bony tissue and prevent an increase in size during active growth periods. The associated soft tissues shrink by loss of adipose tissue. As a consequence, the atrophy that starts in the second decade of life is less noticeable because facial growth is nearly complete [12, 14, 15, 17]. Early onset and longer duration PRS cause greater deformities. The autoimmune hypothesis as a potential cause of PRS is based on the frequent association of PRS with autoimmune diseases. It is further supported by the occasional finding of autoantibodies such as antinuclear antibodies, anti-double-stranded DNA antibodies, anticientromere antibodies, antihistone antibodies, anticardiolipin antibodies, rheumatoid factor and cerebrospinal fluid oligoclonal bands. Infections by slow viruses or bacteria have also been hypothesized as a possible causative factor in PRS including herpes and *Borrelia burgdorferi* (Lyme disease). However, a clear relationship has not yet been proven so far. Moreover, a cerebral disturbance of fat metabolism has been suggested as a primary cause. This results from trophic malformation of the cervical sympathetic nervous system and is supported by results of ablation of the superior cervical ganglion in animal models reproducing clinical manifestations of PRS: hemifacial atrophy, enophthalmos, and bone atrophy on the side of the sympathectomy. The relationship between PRS and localized scleroderma remains controversial [11, 13, 15, 16].

A number of reports of the concurrence of PRS with scleroderma have led to speculation that the conditions may have a common pathogenesis, and that PRS in fact represents a form of localized scleroderma. Only a few cases with a possible hereditary etiology have been identified [3, 5, 8, 9, 11, 13, 15, 16, 18, 19].

In conclusion, the presentation of the above cases clearly depicts that although some features of PRS like facial asymmetry is characteristic, the presentation of a patient primarily with seizures should ideally include a thorough search for a secondary cause or of possible associations. So that, the prognosis can be clearly defined and interventions can be planned if clinically indicated. Moreover, the initiation of PRS skin lesion of en coup de sabre is subtle and might be just ignored by healthcare professionals. Furthermore, epilepsy might not be a primary presentation.

REFERENCES