A case of metageria with a review of literature

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INTRODUCTION

Progeroid syndromes comprise of heterogeneous medical conditions with a variety of systemic and skin etiologies that lead to premature aging 1. Gilchrest identified the cutaneous features of progeroid syndromes as follows: loss of subcutaneous fat, dermal atrophy, alopecia, premature graying of the hair, poikiloderma, persistent cutaneous ulceration, pigmentary aberrations, wrinkling, cutaneous sclerosis, and nail dystrophy. The syndromes are more often than not characterized by these cutaneous findings in dermatology 2–4 none closely mimics the normal aging process. The distribution, specific character, and developmental sequence of pathologic findings diverge from those of normal aging for most organ systems in each syndrome. Furthermore, in each disorder many of the accepted features of normal aging are lacking. These discrepancies are at least as pronounced in the skin as in the other involved organ systems 3.

Progeroid syndromes are divided into several groups based on clinical findings, etiologies, genetic and biochemical markers. The study of progeroid syndromes conduces to a better understanding of the aging process 5.

Metageria is a progeroid syndrome with a high probability of inheritance as an autosomal recessive disease, whose symptoms are observed since birth. These individuals are susceptible to complications, such as atherosclerosis and diabetes mellitus 5.

We present a patient with cutaneous and systemic symptoms mostly consistent with the diagnosis of metageria, although a definite diagnosis occurs with time.

CASE PRESENTATION

An 8-year-old girl, the second child of healthy parents without a family relationship, and the result of a normal full-term delivery, with a normal mental
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capacity was referred to our clinic. The first child of the family did not have any diseases. The second child had no hair growth on her scalp or eyebrows from birth. The patient underwent triamcinolone 20 mg therapy per month for six months, following a diagnosis of alopecia areata universalis prior to referral to the dermatology clinic at Sina Hospital. Pseudomilia lesions appeared around the body and corticosteroid use was discontinued, resulting in her referral to the clinic. The child was taller and thinner than her age group.

Clinical Findings

In the examination, her height was 132cm and her weight was 24kg. The patient had prominent eyes, a normal nose, and a normal voice. However, there was a remarkable generalized loss of subcutaneous fat, leading to prominent subcutaneous vasculature through the skin, especially on the scalp. There was no hair on the scalp, and fine and scattered hair in the eyebrows and eyelashes. There were pseudomilia lesions throughout the body with a larger number on the face. Telangiectasias were located behind the patient’s neck (Figure 1).

In examining her teeth, there were mild cavities in the milk teeth, but the growing permanent teeth in the maxillary and mandible were normal. No heart murmur was found in the cardiovascular examination, blood pressure was normal, and the pulses of all four limbs were found with no abnormal findings. The thyroid gland was not examined, but the genital examination was normal for the age. Moreover, there was no deformity in the organs or joints of the fingers and no evidence of ulceration.

There were no positive findings in the paraclinical studies. Complete blood count, fasting blood sugar (FBS), 2 hours post prandial blood sugar (2hpp), insulin level and erythrocyte sedimentation rate were all normal.

Her lipid profile, thyroid function tests, and liver

Table 1. Clinical manifestations of metageria, acrogeria and pangeria (Werner syndrome) compared to our patient’s signs and symptoms

<table>
<thead>
<tr>
<th>Inheritance</th>
<th>Our Patient</th>
<th>Metageria</th>
<th>Acrogeria</th>
<th>Werner syndrome</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR, AD</td>
<td>Cannot exclude new mutation</td>
<td>AR</td>
<td>AR, AD</td>
<td>AR, AD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender ratio</th>
<th>F=M</th>
<th>F&gt;M</th>
<th>F=M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onset</td>
<td>Birth</td>
<td>Birth</td>
<td>Second decade</td>
</tr>
<tr>
<td>Statute</td>
<td>Tall and thin</td>
<td>Tall and thin</td>
<td>Normal</td>
</tr>
<tr>
<td>Face</td>
<td>Normal</td>
<td>Beaked nose, pinched face</td>
<td>Atrophic with telangiectasias and mottled hyper-pigmentation on extremities</td>
</tr>
<tr>
<td>Skin</td>
<td>Generalized atrophy, telangiectasias</td>
<td>Atrophy on limbs, mottled hyper-pigmentation, telangiectasia</td>
<td>Atrophic with telangiectasias and mottled hyper-pigmentation on limbs</td>
</tr>
<tr>
<td>Scalp hair</td>
<td>Alopecia</td>
<td>Fine and thin</td>
<td>Normal</td>
</tr>
<tr>
<td>Eyes</td>
<td>Prominent</td>
<td>Prominent</td>
<td>Normal</td>
</tr>
<tr>
<td>Nails</td>
<td>Normal</td>
<td>Normal</td>
<td>Dystrophic, thickening</td>
</tr>
<tr>
<td>Limbs</td>
<td>Loss of subcutaneous fat</td>
<td>Generalized loss of subcutaneous fat, one case of leg ulcers</td>
<td>No leg ulcers</td>
</tr>
<tr>
<td>Cardio-vascular</td>
<td>N/A</td>
<td>premature atherosclerosis</td>
<td>Normal</td>
</tr>
<tr>
<td>Skeletal</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
</tr>
<tr>
<td>Metabolic</td>
<td>N/A</td>
<td>Early onset of diabetes mellitus</td>
<td>Normal</td>
</tr>
<tr>
<td>Prognosis</td>
<td>.....</td>
<td>Dependent on severity of diabetes mellitus and atherosclerosis</td>
<td>Normal lifespan</td>
</tr>
</tbody>
</table>

N/A = not applicable, F = female, M = male, CAD = coronary artery disease, AR = autosomal recessive, AD = autosomal dominant.
function tests were also normal. The corticosteroid was discontinued to resolve the patient’s current problem, and topical tretinoin with sunscreen was prescribed for her skin lesions.

**DISCUSSION**

Metageria was first identified as a premature aging syndrome by Gilkes et al, in 1974, who described two patients with the following characteristics: thin birdlike faces, beaked noses, staring eyes, acral cutaneous atrophy, generalized absence of subcutaneous fat, telangiectasias and mottled hyperpigmentation, fine scalp hair, normal sexual maturity, and early-onset diabetes, all observed from birth. To date, patients suspected of having a premature aging syndrome have been diagnosed on the basis of criteria such as skin morphology, age of onset, metabolic disorders (diabetes mellitus, accelerated atherosclerosis, hypogonadism), and height. Based on these criteria, our patient is compatible with a metageria diagnosis due to skin changes in the form of subcutaneous fat loss, cutaneous atrophy,
telangiectasias, alopecia and symptoms from birth. Progeroid syndromes have certain symptoms in common that can be confused in differential diagnoses. In Werner syndrome, such symptoms as cutaneous atrophy, loss of subcutaneous fat, loss of hair, premature atherosclerosis, diabetes mellitus, and hypogonadism are observed.

Acrogeria is one of the differential diagnoses of metageria reported as acrometageria in some cases due to the lack of differentiation between the two. Symptoms that differentiate metageria from acrometageria are generalized skin changes and lack of subcutaneous fat due to diabetes mellitus and early atherosclerosis. In our patient, skin changes were generalized. Due to her age, metabolic changes had not yet appeared in the patient, hence the fact that not all criteria were observable. Another differential diagnosis is hypohidrotic ectodermal dysplasia (HED), a hereditary X-linked condition with a phenotype that includes sparse scalp hair, deficiency of the eccrine sweat glands and anodontia or oligodontia with teeth. This differential diagnosis was made in our patient with regards to alopecia and fine hair on eyebrows and eyelashes. However, in metageria, genetic inheritance is of an autosomal recessive type. Our patient had no issue with sweating or the shape and number of teeth. The patient’s pseudomilia lesions may be considered as a side effect of corticosteroid pulse treatment.

In metageria, the inheritance of the disease is unknown, yet is thought to be autosomal recessive. There was no history of the same problem and no particular diseases running in the family of our patient.

Ophthalmologic examinations should be performed in cases of metageria. A certain study found hyperopia and vitreous body adherence in the right eye of the patient. There was no thyroid abnormality in our patient, whereas late hypothyroidism was diagnosed in a patient with features consistent with metageria reported by Kaufmann et al. Therefore, thyroid function tests should be considered for future follow-up examination.

Patients with metageria have a higher risk of developing diabetes mellitus, and since the prognosis of the disease depends on the severity of diabetes and atherosclerosis, periodic tests in terms of FBS and 2hpp have to be done at specified intervals. Regarding the possibility of treatment-resistant ulceration in metageria, which has even led to amputation in some cases, it is important to pay attention to the presence of any wound in pressure areas and to provide adequate care and use appropriate shoe pads to prevent progeroid complications.

CONCLUSION

Introducing our patient conduces to preventing similar patients from corticosteroid therapy due to misdiagnoses, such as alopecia areata. Proper and timely diagnosis of progeroid syndromes is important for preventing subsequent adverse effects. Further recommended are periodic cardiovascular, neurological and ocular examinations and periodic tests to enable an early treatment of aging symptoms in all patients. In addition to family education, possible complications and required follow-up, children should be psychologically supported. Adhering to a balanced diet and regular use of appropriate sunscreens will help reduce complications. It is recommended that parents undergo genetic counseling prior to another pregnancy.

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Conflict of Interest: None declared.

REFERENCES


