HYPOMELANOSIS OF ITO: A CASE REPORT

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ABSTRACT

A twelve year old female child presented with learning disability. Detailed physical examination revealed anomalies involving the nervous and musculoskeletal system. In addition she had linear and whorled, hypopigmented lesions along the lines of Blaschko distributed over the upper limb, trunk and face on the left side of the body. She fulfilled the diagnostic criteria for Hypomelanosis of Ito, even in the absence of chromosomal studies and advanced histopathological studies.

Key words: Hypopigmentation, Learning Disability, Hypomelanosis, HI.

Ito in 1952, described a woman with a distinctive pattern of whorls and streaks of hypopigmentation over the trunk and extremities under the name of Incontinentia Pigmenti Achromicans (Ito, 1952).

Hypomelanosis of Ito (HI), as it is now called is a multisystem neuro-cutaneous disorder. Considered uncommon earlier, HI is a relatively common disorder. Castroviejo et al. (1988) reported a frequency of 1 in every eight thousand to ten thousand new patients in a general pediatric hospital, and 1 in every thousand new patients in the pediatric neurology service in Spain. In fact HI is fourth in frequency among neurocutaneous syndromes, preceded only by neurofibromatosis, tuberous sclerosis, and Sturge Weber disease. No figures for HI in India are available.

The cutaneous lesions of HI are often characteristic and easy to diagnose. They may be congenital or acquired, and display various patterns of distribution, different shapes and colours, and often follow the lines of Blaschko. Most patients have linear unilateral/bilateral lesions, but patchy lesions may also occur. Lesions are usually hypochromic but may be achromic (Sybert, 1990; Chiyat, 1990).

Pascual-Castroviejo (1997) have detailed the associations and complications of HI which are in concern with the central nervous system. Mental retardation and epilepsy are seen in more that 50% of cases. About 10% of patients with HI show infantile spasms during the infancy and another 10% have autistic behaviours. Other complications consist of ocular, musculoskeletal and oral alterations, hypotonia, macrocephaly, microcephaly, congenital cardiac malformations, urological and genital malformations and other rarer malformations.

Although an autosomal dominant inheritance for HI has been suggested, the vast majority of cases are sporadic (Rubin, 1972; Jeffreys, 1985). Chromosomal anomalies especially translocations or mosaicisms type are found in 50% of cases (Pascual-Castroviejo, 1997).

This case is being reported to highlight the importance of a detailed history and examination including a careful physical examination in children presenting with learning disability, which can help make an etiological diagnosis.
A twelve year old female child, still attending kindergarten was brought for evaluation of her learning disability. From a non-consanguineous parentage she was elder of two children. Her brother aged 10 years, studying in class fifth, was doing well. Both parents now in their mid thirties were graduates. There was no history of mental retardation or significant learning disability in any other member of the family. Her mother had an uneventful pregnancy and an uncomplicated delivery at full term. This child had mild delay in motor development, but a significant delay in speech and language. She started speaking her first words after the age of 30 months. Currently she had acquired satisfactory comprehensive and expressive language, but problems in articulation i.e. unclear speech, difficulty in pronouncing words persisted. She has been continent since early childhood and there was no history of seizures at any time during her life.

On appearance, she had a short stature with short limbs and short fingers. She had mild facial asymmetry with bilateral low set ears and a short neck. Further, she had a high arched palate and epicanthic folds, marked muscular hypotonia, and a simian crease on both palms. There was no evidence of a congenital heart disease. She was somewhat dis-inhibited, easy to communicate with, and affectionate in her emotional disposition. Clinically this girl evidenced poor level of general knowledge and awareness for her age, with intellectual deficits in many areas including vocabulary, calculations, reasoning and abstraction.

She was fair skinned and her cutaneous examination showed whorled, macular, hypopigmented areas along the lines of Blashcko on the left side of the body involving the limbs, trunk and face. A Wood's lamp examination revealed that some lesions were crossing the midline.

Hypo-pigmentation was first noticed at one month of age, but later on it was never thought to have any relation to her learning problems. She never had bullous, verrucous or hyper-pigmented lesions at any stage preceding the hypo-pigmentation.

Her IQ was assessed to fall in the category mild mental retardation. EEG was done, showing non-specific rhythm and amplitude abnormalities in the frontal areas. MRI scan of head was normal. Parents were unwilling for chromosomal study. A skin biopsy was not performed as sophisticated studies other than H & E staining are not available to us.

DISCUSSION

Hypomelanosis of Ito is a reasonably well characterised neurocutaneous disease, although some cases may be difficult to diagnose for reasons such as clinical variability and lack of diagnostic criteria.

Ruiz et al.(1992) have proposed certain criteria for the diagnosis of this disease.
1) Congenital or early acquired non-hereditary cutaneous hypopigmentation in linear streaks or patches involving more than two body segments is the sine qua non.
2) One or more nervous system or musculoskeletal anomalies form the major criteria.
3) Two or more congenital malformations other than nervous system or musculoskeletal system or chromosomal anomalies constitute the minor criteria. Criterion 1, and in addition one or more major criterion or two or more minor criterion give a definitive diagnosis of the disease. Criterion 1 alone or in association with one minor criterion accounts for a presumptive diagnosis.

Nervous system alterations are the most frequently associated extra-cutaneous anomalies in the patients (Ruiz et al.,1992; Castroviejo,1988). These are characterized by mental and motor retardation which are the most frequent, followed by seizures, micro-cephaly, mental retardation, hypotonia, hyperkinesia, hydrocephaly, ataxia, speech defects, motor retardation, cerebral asymmetry, breath holding, myelo-meningocele, cerebral atrophy, hypertonia, neurosensory deafness, in the order of frequency (Ruiz et al.,1992). There are some case reports of HI in
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association with autistic symptoms (Akefeldt, 1992).

The diagnosis remains a clinical one as mosaicism cannot be demonstrated in every case. If it is present it may only be detectable in fibroblasts with the lymphocyte karyotype being normal, from a skin biopsy. Histologically the only consistently reported feature is a reduction in number of melanocytes and melanosomes, increased numbers of Langerhans cells. This is however a non specific finding of no diagnostic value (Schwartz, 1977; Ross, 1982). Hence, we did not go for a skin biopsy as apart from H & E staining, other sophisticated studies are not available to us. Examination of the lesion under a Wood’s lamp was done to clearly delineate the extent of the lesion. No other cutaneous alteration was present.

Conditions to be considered in the differential diagnosis of localized cutaneous hypochromia are pityriasis versicolor, vitiligo, piebaldism, tuberous sclerosis, nevus anaemicus, incontinentia pigmeni, neurofibromatosis, Waardenburg syndrome.

Nevus achromicus or depigmented nevus is the most important differential diagnosis. However involvement of less than three body segments, as also the absence of extracutaneous alterations in nevus depigmentosus are useful distinguishing feature (Ruiz, 1992; Glover, 1989). This girl had whorled hypopigmentation on the limbs, trunk and face (criterion 1), and more than one major and minor criteria, i.e. associated mental and motor retardation, speech defects (dysarthria), muscular hypotonia, a simian crease on the palms and a high arched palate, hence fulfilling the criteria for definitive diagnosis even in the absence of chromosomal studies.

The vast majority of reported cases of HI have been sporadic and none of the patients had a family history of HI (Glover et al., 1989). Although normal karyotypes have often been found in peripheral lymphocytes, chromosomal mosaicism has been shown in dermal fibroblasts, peripheral blood lymphocytes, or both, in some cases. Mosaicism offers a plausible explanation for the streaky hypo-pigmentation, which could result from the presence of two populations of melanocytes with different pigment producing potential. Because HI occurs more frequently in females, it is possible that in some females HI reflects an X-linked dominant mutation with random X inactivation. Such females would transmit the condition to half their daughters, and may themselves have inherited it from their own mothers (Glover, 1989).

In conclusion, until the pathogenesis and genetic basis become clearer, any child having hypopigmented cutaneous lesions of early onset needs to be carefully followed up with eye examination, assessment of hearing, development of epilepsy or mental or motor retardation.

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