Focal dermal hypoplasia: a case report and review of literature

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Summary

A 14 year old girl was seen in the clinic with a huge vulvar wart, and warts on both tonsils. She also had poikiloderma. She had bony abnormalities, which included lobster claw abnormality of the right foot, a right cervical rib, and the right clavicle was lower than the left. There were fine parallel vertical radio-opaque lines in the distal femoral tibial metaphyses bilaterally (osteopathia striata).

A diagnosis of Focal dermal hypoplasia was made.

The huge vulvar wart and the warts on the tonsils were excised. She recovered promptly and she was discharged home.

Keywords: ***Focal dermal hypoplasia, Nigerian, Case report***

Résumé

Une fille âgée de 14 ans était vue dans la clinique atteinte d'un défaut énorme dans la vulve, et les défaux sur les deux amygdales. Elle est également atteinte de la poikilodermie. Elle a mal dans l'os y compris une anomalité dans le lobster claw de la jambe droite, une côte cervicale du droite et la clavicule du droite plus baisse que celle de gauche. Il y a des lignes radio-opaque fines paralleles verticals bilateralement dans les métaphyses distale femorale (osteopathie stiata).

On a fait un diagnostique de la hypoplasie dermal focal. Le défaut très énorme de la vulve et les défauts sur les amygdales ont été opérés. Elle s'est rétabli rapidement et sortie de l'hôpital.

Introduction

Focal dermal hypoplasia is an uncommon disorder affecting organs derived from the ecto and mesoderm. Its cutaneous features were first described in 1921[1] and the non dermatological components of the disorder were highlighted by Goltz in 1962.[2] One of the unique features of the disorder is its variability in organ involvement. The skin, eyes, and skeletal tissue are usually involved. One of the components of the syndrome, papillomas may be present at birth or appear at different sites later on in life. The patients may present with life threatening situations e.g. papillomas may develop in the larynx requiring tracheostomy. The papillomas may also mimic infections such as genital warts which may be wrongly attributed to child abuse in children. We present a case of FDH in a 14 years old Nigerian female who presented with papillomas on the tonsils an d perianal area. She also had a capillary haemangioma in the right gluteal region. As far as we know haemangioma has not been previously documented in this syndrome and it is the first case reported in a Nigerian.

Case report

A 14 year old Nigerian girl was seen in the Gynaecological department of the University College Hospital Ibadan with a five month history of a vulvar mass which was progressively increasing in size. The mass bled especially when it was traumatized and exuded foul smelling fluid. She denied any history of sexual intercourse in the past. Her mother had noticed that she snored during sleep and her voice had become somewhat muffled in the last two years.

There were no associated systemic symptoms and the patient felt well otherwise. Her past medical history revealed that she had presented to the same hospital at the age of 4 years with a complaint of a right gluteal mass, which had been present since birth but had increased in size at that time. The mass had been excised and the histology report from the notes and review of the slides at this visit showed the mass to be a capillary haemangioma (Fig. 1). There had been no recurrence of the lesion. She was also noticed to have shortening of the right limb at that visit.

Table I Skeletal abnormalities in FDH

Short stature
Asymmetry of skull, trunk and extremities
Hypoplastic or absent digits
Syndactyly
Osteoporosis[24]
Fibrous dysplasia[24]
Cyst in metatarsals, fibula, tibia, maxilla, ileum and ischium
Widening of public symphisis[4,25]
Abnormalities of ribs and clavicles
Lobster claw hand and foot
Vertebral abnormalities e.g. scoliosis
Osteopathia straita[26,27]
Osteochrondroma[4] or Giant cell tumours[28]

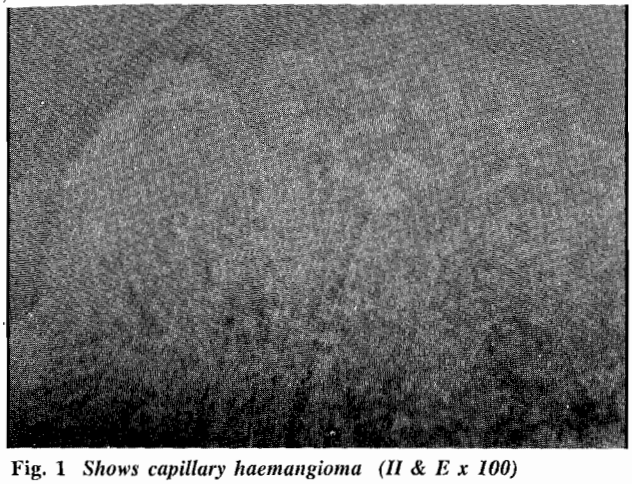

Fig. 1 ***Shows capillary haemangioma (H & E x 100)***

Her mother claimed she had an uneventful pregnancy and delivered her at nine months. She could not remember her birth weight but claimed that she had some raw areas on the skin of the lower limb at birth which had healed within three weeks. She also had a congenital abnormality of the right foot.

The mother denied any history of similar disorder in the family. She did not have any history of miscarriages at any time. She had four other children who were all normal. She also felt her daughter was not mentally retarded, but had started school late because of frequent hospital visits.

Examination of the 14 year old revealed, a young girl with a small stature, weighing 25kg and measuring 1.36 meters in height. Her head circumference was 50cm.

She had a triangular face with large ears (Fig. 2)

Examination of the skin revealed linear streaks of hypo and hyperpigmentation that followed Blashcko's lines. The trunk, limbs,

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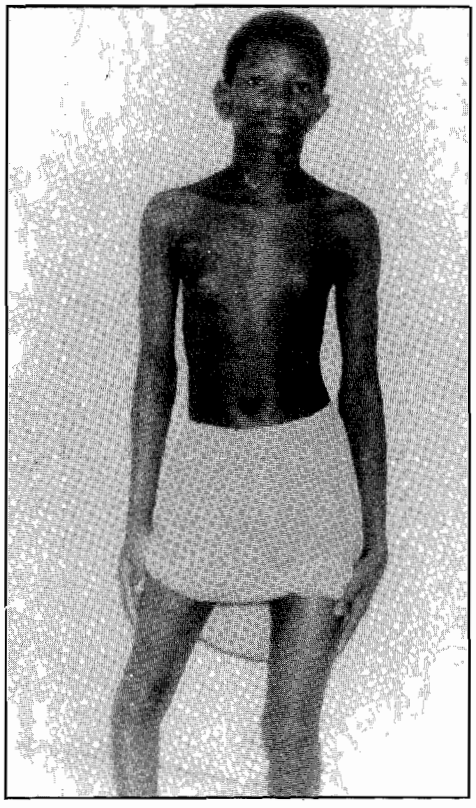

Fig. 2 *Patient with FDII with hypo and hyperpigmented streaks following Blaskcho's lines mainly on the right. There is shortening of the right tibia and fibula.*

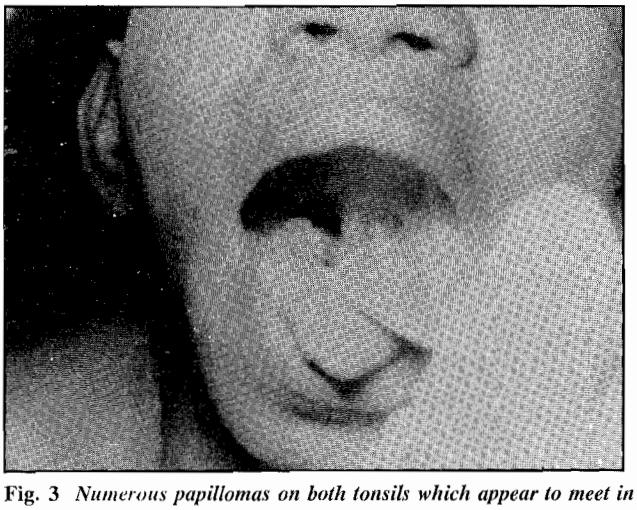

Fig. 3 *Numerous papillomas on both tonsils which appear to meet in the middle "kissing tonsils"*

and part of the face were affected. The pigmentary abnormalities were interspersed with striate atrophic areas and the right side of the body was more affected. (Fig. 2) Erythema was prominent in the hypopigmented area of the lower limbs. She had scarring alopecia in areas affected by the atrophic lesions. The third fingernail was absent and this had been so from birth.

The breasts were normally developed for her size but she had sparse axillary and public hair. She had scoliosis and shortening of the right tibia and fibula by about 6cm. She also had a lobster claw deformity of the right foot.

Eye examination revealed posterior subcapsular cataract.

Oral examination revealed small conical shaped teeth with malocclusion.

She had markedly enlarged tonsils with wart-like growths that appeared to meet in the midline "kissing tonsils" (Fig. 3). The larynx appeared normal.

Examination of her genitals revealed a huge right vulvar growth

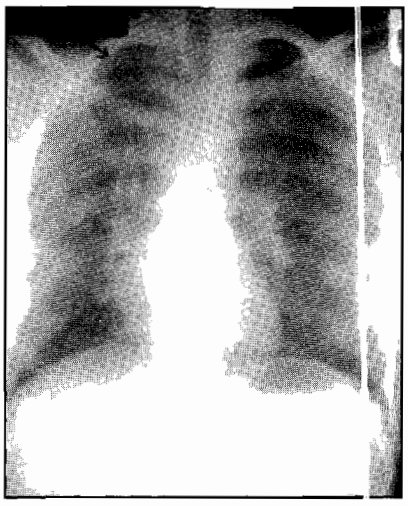

Fig. 4 *Chest radiograph showing cervical ribs (arrows) and left clavicle higher than the right.*

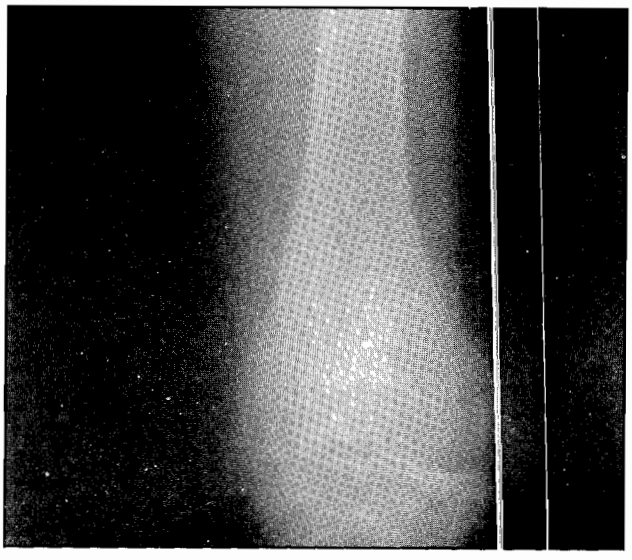

Fig. 5 *Xray of the right knee joint showing linear sclerotic bands osteopathia straita*

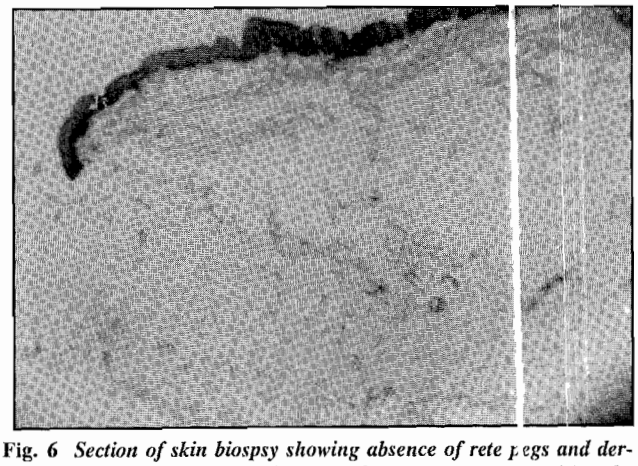

Fig. 6 *Section of skin biospsy showing absence of rete pegs and dermal appendages with bundles of mature adipocytes within the dermis. (H & E x 40)*

extending to the perianal area with a lobulated surface. It had a few ulcers on the surface and exuded blood stained foul smelling fluid. Her hymen was intact. The rectal examination was normal.

Examination of the cardiovascular, respiratory, and central nervous systems appeared normal. Results of invetigations are outlined below.

Her haematological work up and electrolytes and urea were within normal limits. X-ray findings were rounded lucencies in the

parietal bones in keeping with congenital parietal foramina. Both frontal sinuses were dysplastic, while the ethmoids were cloudy with the right nasal turbinate engorged, suggesting chronic sinusitis. There was caries of the left second upper incisor and rarefaction of the maxillary bone anteriorly. There was a right cervical rib and a prominent transverse process on the left side, with the left clavicle being higher than the right (Fig. 4). X-ray of the thighs and knees showed linear lucencies in the muscles of the thighs especially on the posterior aspect. There were fine parallel vertical radio-opaque lines in the distal femoral and proximal tibial metaphyses bilaterally, better demonstrated on the right side, osteopathia straita (Fig. 5). There was also loss of parallelism of the articular surfaces of the right knee due to uneven modeling and expansion of the medial notch. Pelvic ultrasound revealed a hypoplastic uterus.

She then had diathermy excision of the vulvar growth and bilateral tonsillectomy. Histology of the tonsils and vulvar mass showed acanthosis, papillomatosis and koilocytosis of the epithelium with focal parakeratosis. Some of the tonsillar crypsts were covered by debris and foamy histiocytes. These lesion were thought to be harmatomatous.

Histology of the atrophic skin lesion showed loss of rete pegs with bundles of mature adipocytes within the reticular and papillary dermis associated with atrophy of dermal appendages (Fig. 6). These features were consistent with atrophy that could be associated with Goltz Syndrome. The patient subsequently had an eventful recovery from the surgery and was discharged home.

Discussion

The term 'focal dermal hypoplaia' does not describe the protean manifestations of this disorder that involves various organs in the body but it has come to stay. FDH is a developmental disorder of organs of mesodermal and ectodermal origin. There are about 200 cases in the literature.[3] There is strong evidence that it is inherited as an X linked dominant condition.[4] It has a female preponderance and there is an increased frequency of miscarriage of male fetuses in affected females.[4,5] However a few cases have been documented in males [6,7,8] and these have been attributed to half chromatid mutations or autosomal dominant inheritance affecting the germ cells.[9] Spontaneous cases resulting from mutation do occur as can be assumed to be the case in our patient with no family history of the disorder nor moaicism of it.

The variability in the expression of FDH within families and involvement of the skin and bone can be explained by the Lyon' hypothesis in which random inactivation of the mutant gene results in mosaicism,[10] and the percentage of the active mutant X chromosome present would determine the clinical picture in the individual. The atrophic linear streaks with pigmentary abnormalities following Blashcko' lines on the skin, and the linear streaks on the bone indicate some form of X chromosome mosaicism resulting in clonal proliferation of two functionally different populations of cells during embryogenesis.[11]

Some authors have confirmed the findings of two different populations of dermal fibroblasts in the affected individual with fibroblasts in the affected skin being abnormal while that in the unaffected skin was normal.[12,13]

FDH manifests itself in different organs of ectodermal and mesodermal origin but its effect is mainly on the connective tissue of bone and skin.[3,14] Patients are of small stature, they have a triangular face and large ears for the size of their face. Cutaneous manifestations of FDH in the same individual may be varied. It may be bilateral but asymmetric or solely unilateral. There are reports of patients with FDH without skin involvement[15] but skin involvement is usually regarded as essential for diagnosis.

When hair and nail disorders[16] are excluded, the major cutaneouss features could be grouped into five.

1. Congenital aplasia of the skin
2. Multiform patterns of atrophic like lesions
3. Striate lesions.
4. Verrucoid papilloma of skin and mucous membrane (angiofibroma).
5. Lipomatous lesions

Telangiectasia and hyperpigmentation of various designs and amounts may accompany or overlap the multiform atrophic lesions and straited lipomatous lesions.

Congenital aplasia of the skin

This is not very common and the skin is completely absent in the affected site at birth.[17,18] In some patients there may be some bullous eruptions or inflammatory process on the skin at birth which usually heals up living a scar as was reported in our patient.

Multiform pattern of atrophic like depression

This has been described with different names such as atrophy, depressions, scars, congenital linear mascular atrophederma or focal dermal hypoplasia. Histological features of these lesions depend on the age of the lesion. New lesions may show an increase in dermal blood vessels but the older lesions show a thin or absent dermis, i.e. dermal hypoplasia with mid dermal fat deposits.

Straite lesions

These are linear stripes or streaks which are congenital. They may be inflammatory at the onset and may be confued with incontinentia pigmenti. The histology of Straite lesions usually reveals increased proliferation of blood vessels, increase in ground substances, and inflitration of lymphocytes and histiocytes.

Papillomas

The papillomatous lesions known as angiofibroma or fibrovascular papillomas are an important component of the disorder that may be present at birth or develop as the child gets older. They have been reported in various locations in the body but the commonest sites are the perineum, vulva, and perianal regions.[3,16,19] The vulvar lesions are usually misdiagnosed as genital warts (condyloma accuminata)[16,17] as was the case in our patient. The warts on her tonsils had suggested the possibility of oral sex which in the younger patients may insuniate sexual abuse and lead to false accusations. Papillomas have been reported in the larynx, eye lid margins, mouth, pharynx, tonsils, palate, gums, tongue and lips. The fingers and pinna may also have papillomas on them. These lesions may also produce life threatening situations e.g. papillomas in the larynx requiring tracheotomy,[20] or those occuring the oesophagus causing stricture.[21] Malignant transformation of papillomas has also been reported.[22]

Histology of the papillomas show a fibrovascular stalk covered with a layer of acanthotic stratified squamous epithelium resembling epidermis with extenive papillary folds. Hyperkeratosis and parakeratosis may be present. The stalk is composed of loose connective tissue with dilated vessels and an admixture of inflammatory cells.

Lipomatosis

These manifest as skin coloured nodules or nodules slightly darker than the normal skin. Lipomatosis does not occur in all patients and was not present in our patient. The histology of the lesions show lobulated fat approaching the epidermis but separated by a few strands of connective tissue. This results from hypoplasia of the dermis which varies in the different areas. The hair may be sparse especially if the scalp is involved and apocrine gland abnormalitie have been reported.[22]

Hydrocystomas have also been reported around the eyes.[23] Nail abnormalities include dystrophic nails or total absence of the

nail as was seen in our patient.

Skeletal abnormalities in the patients with FDH have been highlighted in table 1. Of note is the linear streaks in the metaphyses of the long bones osteopathia straita. This has established itself as one of the hallmarks of FDH [26, 27] which was also seen in our patient. It is not present in all cases. The lobster claw deformity affecting the hands or foot are also striking abnormalities of the syndrome. A number of abnormalities of soft tissue have also been reported in a few of these patients. They include urinary tract abnormalities e.g. horse shoe kidney, dilated ureters with inflammation and cystitis. Others include a diaphragmatic hernia and reflux oesophagitis. Some of the patients do mature and have reproductive capabilities but our patient had a hypoplastic uterus.

Excellent reviews on eye signs in FDH have been published [29, 30] and they include colobomas, (especially of the iris), microophthalmia, anophthalmia, hypertelorism, optic atrophy, keratoconu, cortical and subcapsular cataract. Strabismus, nystagmus and disorders of lachrymal gland apparatus have also been documented.

Many patients with FDH have some level of mental deficiency and there are reports of meningomyelocele, hydrocephalus and Arnold Chiari malformation in a patient.[31] Seizures have not been reported in association wiht this disorder. Our patient had an associated capillary haemangioma on the right gluteal region which is in keeping with mesodermal abnormalities. As far as we know this has not been previously reported in association with this syndrome.

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