Case Report

Elephantiasis Neurofibromatosa of the Lower Limb in a Patient with Neurofibromatosis Type-1: A Case Report

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Introduction:

Neurofibromatosis is a neurocutaneous syndrome, mostly familial in origin and believed to arise from a defect in differentiation of the primitive ectoderm. There are two distinct forms of neurofibromatosis – type-1 and type-2[1]. Neurofibromatosis type-1 (NF-1), previously known as Von Recklinghausen disease, is an autosomal-dominant disorder with a frequency of approximately 1 in 3,000 births[2]. Neurofibromatosis type-1 classically presents with hyperpigmentation, known as café-au-lait spots, and multiple neurofibromas[3]. Plexiform neurofibroma is considered as an uncommon skin tumor. The involvement of the lower limb is rare. The management of patients with plexiform neurofibroma is not well defined and aims mostly at controlling symptoms[4]. In this report, we present a rare case of neurofibromatosis with right lower limb gigantism.

Case report:

Master AR, a 10 years old boy of a non-consanguinous parents from Nandail, Mymensingh was admitted in the Department of Paediatrics, Bangabandhu Sheikh Mujib Medical University on 09.10.2011, with the complaints of painless swelling of right leg since 15 months of his age, which was slowly increasing in size. But for the last 6 months, the size was growing rapidly. He had history of limping since early childhood which was also gradually increasing along with difficulty in walking. AR had no history of any trauma to the leg and also no family history of such illness.

On examination, AR had a large irregular, pendulous swelling present in the right leg extending from knee joint to ankle joint (Fig.1A), which was non tender and of variable consistency. Some nodular lesions could be felt within the swelling. The overlying skin was normal but around the right ankle joint, the skin was wrinkled. Due to this large swelling, there was disfigurement of the right lower limb including the ankle. The right ankle joint was deformed and deviated medially with restricted movement (Fig. 1B). AR also had multiple 'Café-au-lait' lesions (Fig.1C) and multiple nodular lesions of variable size at different parts of the body. There was no scoliosis, hypertension, hearing problem, any neurological complication or facial asymmetry. Slit lamp examinations of the eyes were normal. X-ray of the right lower limbs showed expansion of lower end of tibia and fibula, diffuse osteopenia with increase interosseous space, and bowing of lower shaft of fibula suggestive of neurofibromatosis (Fig.2). Ultrasonography (USG) of the right lower limb found mixed echogenic soft tissue

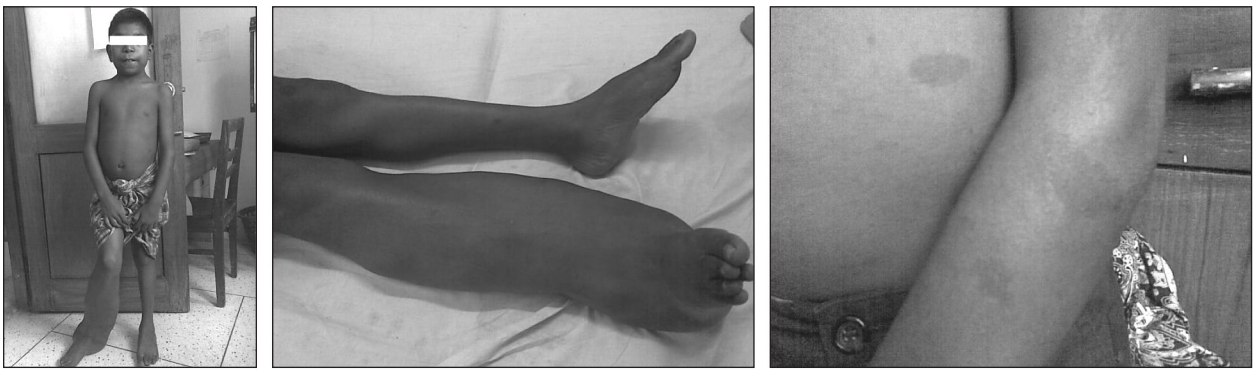

Fig.-1: *The patients with gross enlargement of the right lower limb (A) & (B); café-au-lait spot of variable sizes (C).*

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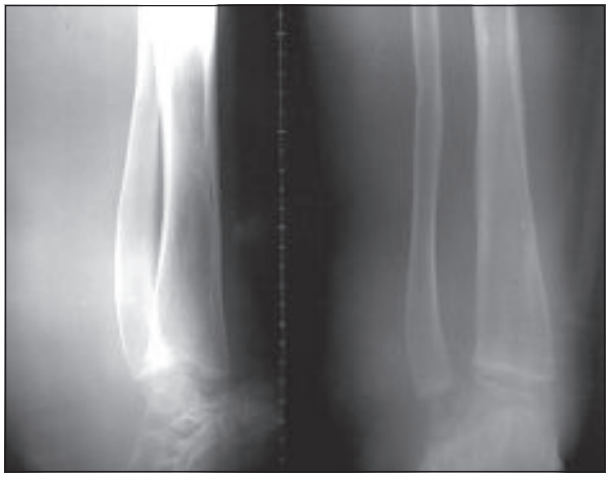

Fig.-2 : *X-ray of the right lower limb.*

swelling throughout the length, giving lobulated and whorled appearance suggestive of neurofibromatosis. Color flow showed no abnormality.

MRI of the right lower limb showed focal gigantism with hypertrophied lymphatic and vascular components. X ray skull and MRI of the brain were normal. On the basis of history, clinical findings and investigations, AR was diagnosed as a case of neurofibromatosis type-1. The histopathology reports confirmed the diagnosis of neurofibroma, a benign tumour composed of fibroblast, collagen fibres, blood vessels and neuritis (Fig.3). He was referred to the orthopedic surgery department and partial debulking surgery was done. Parents were counceled that full correction would need another two or three staged debulking surgery and thereafter reconstructive surgery would be done. He was advised to come three months later for follow-up and second debulking surgery. But unfortunately, patient didn't come for further follow-up or surgery.

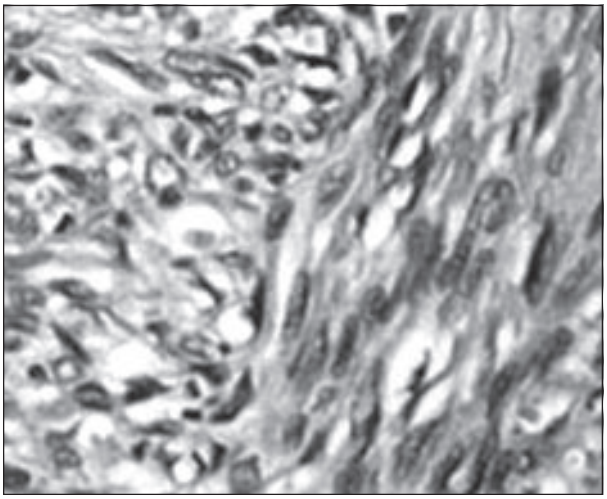

Fig.-3 : *Histopatholgical findings showing fibroblast, collagen fibres, blood vessels and neuritis*

Discussion:

Neurofibromatosis -1 is a hamartomatous disorder, with the genetic defect localized to the long arm of chromosome 17 and accounts for more than ninety percent of the cases of neurofibromatosis[2,5]. It is characterized by various skin lesions and peripheral or central nervous system neoplasm.

The well-recognized diagnostic criteria of neurofibromatosis-1 are neurofibromas (two or more simple, or one plexiform neurofibroma), café-au-lait spots (six or more, >5 mm in greatest diameter in children and >15 mm in adults), Lish hamartomas in iris (two or more), axillary or inguinal freckling, skeletal abnormalities (sphenoid dysplasias or cortical thinning, with or without pseudoarthrosis), optic glioma and first-degree relative with NF-1. Presence of two or more of these seven criteria establishes the diagnosis of NF-1[6]. In our patient, three of the seven above-mentioned diagnostic features were present. They were 1) more than six café-au-lait lesions, 2) more than two neurofibromas and 3) skeletal abnormalities.

On the other hand, there are two criteria for diagnosing neurofibromatosis-2 which are bilateral eighth nerve masses consistent with acoustic neuromas as demonstrated by CT scanning or MRI and a parent, sibling, or child with NF-2 and either unilateral eighth nerve masses or any two of the following: neurofibroma, meningioma, glioma, schwannoma, or juvenile posterior subcapsular lenticular opacities[1].

Plexiform neurofibromas are benign peripheral nerve sheath tumors, often involving the trigeminal or upper cervical nerves are found in up to 26% of patients with NF-1. It is considered as an uncommon skin tumour, usually presenting at birth or during the first several years of life[7]. There are two types of plexiform neurofibromas, nodular and diffuse. Diffuse plexiform neurofibroma is also known as 'elephantiasis neurofibromatosa' and is characterized by an overgrowth of epidermal and subcutaneous tissue associated with a wrinkled and pendulous appearance[5]. Plexiform neurofibromas contain a mixture of Schwann cells, fibroblasts, reticulin and collagen fibers and a loose mucoid matrix interspersed between the axons of the parent nerve. They typically affect the trunk and extremities, but may also involve the head-neck and bladder. Associated bone dysplasia

is often encountered secondary to chronic hyperemia or as part of the mesodermal dysplasia. Such tumours give rise to a variety of problems, including disfigurement and functional impairment[7]. AR had disfigurement of lower limbs and difficulty in walking. The histopathology report was also consistent with that of plexiform neurofibromatosis.

It has been found that 30-50 percent of NF-1 patients have no affected relatives, indicating that the majority of such cases can be attributed to spontaneous mutations[4]. AR also did not have any affected relatives.

Neurofibroma type-1 is considered as a benign tumour condition; however malignant transformation has been reported in two percent of patients with NF-1 (4.2% of those older than 21 years of age)[8]. Malignant peripheral nerve sheath tumours, which generally arise from plexiform neurofibromas, may develop silently in deep plexiform neurofibromas and does not give rise to symptoms until distant metastases have occurred[9].

The management of patients with plexiform neurofibroma is not well defined and is aimed mostly at controlling symptoms. Surgical excision is probably the only therapy available because there is no medication that can prevent or treat plexiform neurofibromas. However the results of surgical excision can be poor and the procedures can be complicated due to the size, location, vascular status, neural involvement, microscopic extension of the tumour, and the high rate of tumour re-growth[9].

Conclusions:

Early diagnosis of neurofibromatosis and adequate intervention is essential to prevent complications of this disease. Only history, clinical examination and radiological investigations can diagnose NF-1. So physicians should be cautious about the correct diagnosis of the disease and timely intervention.

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