CASE REPORT

CASE STUDY OF PLEOMORPHIC RHABDOMYOSARCOMA IN PATIENT WITH NEUROFIBROMATOSIS TYPE-1

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Background A 42-year-old man, known case of neurofibromatosis type 1 with café au late spots on trunk and extremities, neurofibromas, axillary freckling, pseudoarthrosis of distal tibia. He presented to the district cancer hospital with complaint of huge mass on lateral chest wall. Incisional biopsy was done and case was diagnosed with pleomorphic rhabdomyosarcoma. Immune/histochemical staining is positive for desmin. Rhabdomyosarcoma is a malignant soft tissue tumour with rare incidence in general population. There are few cases of pleomorphic rhabdomyosarcoma in NF 1 patient are reported in literature. This case study reports a rare occurrence of rhabdomyosarcoma in adult neurofibromatosis 1 patient.

Keywords: Neurofibromatosis; Café au lait spots; Pseudoarthrosis; Rhabdomyosarcoma

Citation: Khan AB, Ahmed A, Muhammad I. Case study of pleomorphic rhabdomyosarcoma in patient with neurofibromatosis type-1. J Ayub Med Coll Abbottabad 2021;33(Suppl. 1):823–4.

INTRODUCTION

Neurofibromatosis type 1 (NF1) is among the most common neurogenetic disorders, affecting approximately one in 3000 to 4000 individuals worldwide.[1] Neurofibromatosis type 1, also known as von Recklinghausen's disease, is a neuro-dermal dysplasia. The exact pathogenesis of NF 1 is debatable but recent research shows that mutations in *NF 1* gene located on chromosome 7*p* are possible cause of genesis of disease.[2] The most common clinical features of the disease are pigmented flat macules such as cafe´ au lait spots, axillary and inguinal skinfold freckling, and iris hamartomas known as Lisch nodules. Other NF1 is also associated with learning disabilities, orthopaedic problems (scoliosis, pseudoarthrosis), and benign and malignant tumors.[3] Certain types of malignant neoplasms, including rhabdomyosarcoma (RMS), have also been described in association with NF1. This case report discusses the rare clinical case of adult-onset pleomorphic rhabdomyosarcoma in a patient with neurofibromatosis type 1.

CASE REPORT

A 42-year-old man presented to the routine OPD of tertiary care hospital, complaining of a huge painless left lateral chest mass. The mass appeared five months ago as a small nodule, which had gradually increased in size over the past 5 months. The mass has dimensions of 20×12 cm, irregular margins, and has a firm consistency. Baseline investigations and metabolic profile were normal. Incisional biopsy report shows high-grade spindle cell sarcoma-morphologically favours pleomorphic rhabdomyosarcoma. The tumour marker is positive for desmin. The bone scan shows no evidence of osteoblastic metastasis. The patient is also a known case of neurofibromatosis type 1, which was diagnosed at the age of 20. The patient exhibits signs of NF 1, including neurofibromas, café ae lait spots, axillary freckling, pseudoarthrosis of the left leg. Family history is significant for café ae lait spots in a 12-year-old daughter.

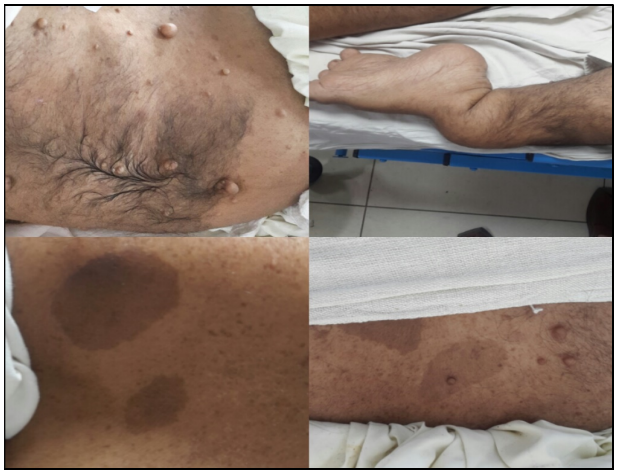

Figure-1: Clinical manifestation of Neurofibromatosis type 1

DISCUSSION

Neurofibromatosis is an autosomal dominant disorder with variable penetrance, commonly characterized by neurofibromas, café ae lait spots, skinfold freckling, and lisch nodules.[4] The National Institutes of Health Consensus Development Conference has made the diagnosis of neurofibromatosis through clinical assessment of 2 or more of the features listed in table-1.

Table-1: Diagnostic criteria for neurofibromatosis 1

• 6 or more café au lait macules (>0.5cm in children or >1.5cm in adults).
• 2 or more cutaneous/subcutaneous neurofibromas or one plexiform neurofibroma.
• Axillary or groin freckling.
• Optic pathway glioma.
• 2 or more Lisch nodules (iris hamartomas seen on slit lamp examination).
• Bony dysplasia (sphenoid wing dysplasia, bowing of long bone +/- pseudoarthrosis)
• First degree relative with NF1.

(NIH consensus development conference 1988)[5]

Mutation in NF1 gene; code for neurofibromin located on chromosome 17q, is associated with an increased risk of developing both benign and malignant tumours in affected individuals.[6] Café au lait spots are the most common cutaneous manifestation of neurofibromatosis 1 usually present at birth to 12 years of age at the frequency of >99%. They are irregular shaped, light brown, flat patches present on the trunk and extremities.[7,9] Another common skin finding is neurofibroma, a benign nerve sheath tumour that forms soft cutaneous or subcutaneous bumps. Cutaneous neurofibroma mostly arises after the age of 7 years usually in the late teens or early twenties.[7] Although NF1 is benign disease studies have shown that malignant transformation occurs at the incidence rate of 2–10% in a lifetime. One of the most common tumours associated with NF1 is neurofibrosarcoma, malignant peripheral nerve sheath tumours (MPNST), others are pheochromocytoma, rhabdomyosarcoma, and leukaemia may be associated with the disease.[8,9] This clinical case reports the occurrence of rhabdomyosarcoma inpatient with neurofibromatosis. In 2006, Oguzkan *et al* reported two cases of bladder Rhabdomyosarcoma in 10 months and 12 infants. Both cases demonstrate characteristic features of neurofibromatosis 1, i.e., multiple café ae lait spots, axillary and inguinal freckling. In both patients, the tumour was located in the posterior wall of the bladder. Cystoscopy was done in both patients to obtain a biopsy of the bladder mass. Biopsy samples showed a stroma-rich and spindle-cell appearance. Immunohistochemical staining showed that tumour cells were positive for desmin and vimentin. Consequently, the histologic diagnosis of embryonal RMS was made.[10]

In another study conducted between 1994 to 2012, Crucis et al identified sixteen patients of RMS in eight medical centers of France. Six patients had café ae lait spots and two had Subcutaneous neurofibromas at the time of diagnosis of the tumour. The median age at tumour diagnosis was 2.4 years. (0.5–5.9 years), all tumours were subsequently diagnosed as embryonal Rhabdomyosarcoma.[11] Although rhabdomyosarcoma has increased incidence in children with NF 1 with the incidence of 2%, its diagnosis is rarely made in adults (0.4%)[12]. This case discusses a possible association of adult-onset rhabdomyosarcoma with neurofibromatosis.

The pleomorphic subtype of rhabdomyosarcoma occurs more commonly in older people between the age group of 50–60 years. Histologically it is characterized by spindle-shaped cells arrange haphazardly with cigar-shaped nuclei and prominent nucleoli.[13]

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Submitted: August 15, 2020 | *Revised: --* | *Accepted: January 15, 2021*

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