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A CASE REPORT OF VON RECKLINGHAUSEN'S PHAKOMATOSIS

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ABSTRACT Neurofibromatosis type 1 (NF1), also known as von Recklinghausen's disease, is a common autosomal dominant neurocutaneous disorder caused by mutations in the NF1 gene located on chromosome 17q11.2. It has complete penetrance but variable expressivity and affects approximately 1 in 3,000 individuals globally. The disorder is characterized by pigmentary skin lesions, benign nerve sheath tumors, and potential systemic involvement. We present the case of a 61-year-old male who exhibited multiple cutaneous neurofibromas, café-au-lait macules, axillary freckling, and Lisch nodules—clinical features that fulfill the National Institutes of Health (NIH) diagnostic criteria for NF1. The patient reported longstanding, progressively increasing nodular swellings and sensory symptoms in the lower limbs. A positive family history further supported the genetic nature of the condition. Systemic examination and imaging were largely unremarkable, with no evidence of malignant transformation. Although cutaneous neurofibromas are benign, plexiform variants carry a risk of malignancy, necessitating close clinical monitoring. Management of NF1 is primarily symptomatic and requires a multidisciplinary approach, including regular follow-up, surgical removal of problematic tumors, genetic counseling, and psychological support. This case highlights the significance of comprehensive clinical evaluation in diagnosing NF1 and underscores the importance of lifelong surveillance and supportive care to improve patient outcomes and quality of life.

KEYWORDS : Neurofibromatosis Type 1 (NF1), Cutaneous neurofibromas, Genetic disorder.

INTRODUCTION

Neurofibromatosis is a genetic neurocutaneous disorder characterized by tumor formation in the nervous system and skin.[1] The most common types are Neurofibromatosis type 1 (NF1) and type 2 (NF2), with NF1 accounting for about 96% of cases. NF1 affects approximately 1 in 3,000 live births and occurs equally across genders and ethnic groups. Around 50% of NF1 cases result from spontaneous mutations, while the remainder are inherited in an autosomal dominant pattern, showing complete penetrance with variable expressivity. Histologically, neurofibromas are benign tumors comprising Schwann cells, perineural cells, fibroblasts, mast cells, and axonal processes within a collagenous matrix. Plexiform neurofibromas arise from nerve fascicles and may infiltrate nearby tissues, while schwannomas, often involving the eighth cranial nerve, consist of spindle cells with Antoni A and B patterns, Verocay bodies, and hyalinized vessels.[1-3]

Neurofibromatosis type 1 (NF1) typically presents in early childhood, often with signs visible at birth or by age 10. Common features include café-au-lait spots, freckling in skin folds, Lisch nodules on the iris, and soft skin tumors called neurofibromas. Plexiform neurofibromas may involve multiple nerves and cause disfigurement. Children with NF1 may also exhibit bone deformities like scoliosis, learning difficulties, attention issues, optic pathway gliomas, larger head size, and shorter stature. The severity and combination of symptoms can vary widely among individuals. The main risk factor for NF1 is a family history, with about half of cases inherited from a parent. In others, it results from a new gene mutation. NF1 follows an autosomal dominant pattern, giving each child of an affected parent a 50% chance of inheriting the condition.[4, 5]

Neurofibromatosis type 1 (NF1) is diagnosed using NIH criteria, where at least two of seven features must be present. These include multiple café-au-lait spots, neurofibromas, axillary or groin freckling, optic glioma, Lisch nodules, specific bone abnormalities, or a first-degree relative with NF1. Genetic testing is not routinely required. Conditions resembling NF1 include NF1-like syndrome (due to SPRED1 mutation), familial café-au-lait spots, and segmental NF1. Café-au-lait spots and neurofibromas in NF1 are usually benign and need no treatment unless symptomatic, where surgical removal may be done. Plexiform neurofibromas have a risk (8–13%) of becoming malignant, indicated by persistent pain, rapid growth, or hardening, and are treated with wide excision or imatinib. Regular neurologic and ophthalmologic monitoring is important, especially for optic gliomas, which are treated with chemotherapy. Children should be assessed for learning issues, and genetic counselling is advised.[5, 6] Here we present a case report of a 61-year-old male patient who came with multiple fibromas present on his entire trunk, which was insidious in onset and later became progressive over a few years.

Case Presentation

A 61-year-old male from Kolhapur presented to the outpatient department for evaluation and issuance of a handicap certificate. His primary complaints included multiple nodular swellings over his trunk, face, chest, abdomen, limbs, and thighs, present since childhood, along with numbness and tingling in the lower limbs. These nodules had gradually increased in size and number, although he was able to carry out his daily activities. There was no history of visual impairment. A positive family history was noted, with similar lesions in his mother and daughter.

On general examination, the patient was alert, oriented, afebrile (97°F), and thin-built. Vitals were stable. Dermatological examination revealed numerous soft, pedunculated cutaneous nodules ranging from millimeters to several centimeters in size, along with café-au-lait macules on the neck, back, and limbs. Axillary freckling and fibro-nodular lesions were also observed. Systemic examination was largely unremarkable, with normal cardiovascular and respiratory findings. CNS examination showed absent ankle jerk, but no cranial nerve involvement or other neuropathy.

Ophthalmological evaluation revealed Lisch nodules in the right eye (inferonasal), with visual acuity of 6/36. Routine laboratory investigations were within normal limits. CT and MRI of the brain and spine were normal. Chest X-ray was unremarkable.

The patient was diagnosed with Neurofibromatosis Type 1 (NF1) based on clinical criteria. There is currently no curative treatment for NF1; management is symptomatic and multidisciplinary. The patient was advised regular monitoring for complications, possible orthopedic referral for skeletal issues, surgical excision of symptomatic or disfiguring neurofibromas, and was counseled regarding the genetic nature of the condition. Education and psychological support were also recommended.

DISCUSSION

Neurofibromatosis type 1 (NF1), also known as von Recklinghausen's disease, is a common autosomal dominant genetic disorder characterized by variable clinical expressivity and complete penetrance.[6] The case presented involves a 61-year-old male with multiple cutaneous neurofibromas, café-au-lait spots, axillary freckling, and Lisch nodules, consistent with the diagnostic criteria established by the National Institutes of Health (NIH). The presence of a positive family history further supports the inherited nature of the disease in this patient.

The pathological changes in NF1 originate during embryonic development, before the differentiation of the neural crest. NF1 is the most common form, accounting for about 90% of cases, with a prevalence of 1 in 3,000 births, affecting all sexes and races equally. NF1 is caused by mutations in the NF1 gene located on chromosome 17q11.2, which encodes the protein neurofibromin—a tumor suppressor that negatively regulates the Ras/MAPK pathway. Loss of function in this gene results in uncontrolled cell growth and tumor formation, particularly affecting neural tissues.[7-9]

The hallmark clinical features of NF1 include six or more café-au-lait macules, two or more neurofibromas or one plexiform neurofibroma, axillary or inguinal freckling, optic pathway gliomas, two or more Lisch nodules, distinctive osseous lesions, and a first-degree relative with NF1.[1] In this case, the patient met multiple criteria, including skin findings, ocular manifestations, and family history, thereby fulfilling the clinical diagnosis.

Despite the benign nature of cutaneous neurofibromas, complications such as plexiform neurofibromas can arise, which carry a risk (8-13%) of malignant transformation into malignant peripheral nerve sheath tumors (MPNSTs).[10] Hence, regular follow-up and monitoring for changes in lesion size, pain, or neurological deficits are essential. Although there is no curative treatment, management remains supportive and multidisciplinary, focusing on symptomatic relief, surgical removal of problematic tumors, and psychological counseling.

CONCLUSION

Neurofibromatosis type 1 (NF1) is a multisystem genetic disorder with highly variable manifestations, necessitating early recognition and long-term multidisciplinary care. This case illustrates the classic clinical features of NF1 and emphasizes the role of comprehensive clinical evaluation in diagnosis. Although no definitive cure exists, regular surveillance, symptomatic treatment, genetic counselling, and patient education are crucial in improving quality of life and minimizing complications. Ongoing research into targeted therapies offers hope for future advancements in NF1 management.

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