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Breast mass in a 10-year-old girl with neurofibromatosis type 1: A case report

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Abstract
Neurofibromatosis type 1 (NF1) is a common autosomal dominant, multisystem disorder. The characteristic manifestations include, multiple café au lait spots, axillary and inguinal freckling, and multiple cutaneous neurofibromas. More serious complications of NF1 include optic nerve glioma, and malignant peripheral nerve sheath tumors. In this study we report a case of a 10 years old female affected with NF1, presented with breast mass, which was diagnosed as benign neurofibroma on the basis of histopathological findings. Considering no malignancy was detected, surgical intervention was not indicated. Management plan included counseling with regular follow up of the patient.

Keywords: neurofibromatosis, neurofibroma, café au lait spots, breast, pre-pubertal

Introduction
Neurofibromatosis type 1 (NF1), is a common autosomal dominant, multisystem disorder, which occurs across all ethnic groups, and affects approximately 1:2500 to 1:3500 individuals [1]. NF1 is associated with cutaneous, neurologic, and musculoskeletal features. The characteristic manifestations include, multiple café au lait spots, axillary and inguinal freckling, multiple cutaneous neurofibromas, iris Lisch nodules, and choroidal freckling. Less commonly, NF1 can be associated with more serious conditions, such as, optic nerve glioma, and malignant peripheral nerve sheath tumors [2].
A clinical diagnosis of NF1 can be established in an individual who meets the diagnostic criteria for neurofibromatosis 1, developed by the National Institutes of Health [NIH 1988]. In children, a definite diagnosis of NF1, using NIH criteria, can be made mostly by the age of 4 years old. The earliest feature to develop is multiple café au lait spots, while cutaneous neurofibromas, rarely develop before late childhood [2].
We report an unusual case of 10 years old female, known case of NF1, presented with breast neurofibroma.

Case report
A 10-year-old girl, known case of NF1 presented to out patient clinic in King Khalid University Hospital in Riyadh, with a left breast mass, noted since 6 months, progressive in size, and associated with mild pain. The family reported a history of NF1, in both her father and older brother.
On general examination, she looks healthy, no signs of distress or pain. Growth parameters are within normal range in relation to her age. No signs of dimorphic features or intellectual disability. Multiple café au lait spots, scattered all over her body, were noted. On breast examination, there was a marked discrepancy in size.
Left breast (Tanner III) a 2x2 cm mobile mass was palpable at 2 O'clock, involving the nipple, with no signs of any discharge. Left axillary lymph nodes were palpable.
Right breast (Tanner I) no masses, palpable lymph nodes, or any abnormalities noticed (Figure 1).
The rest of the physical examination demonstrated normal findings.
Liver and renal function tests and electrolytes were within normal range.
Breast ultrasound showed mild hypertrophy of the glandular tissue of the left breast as compared to the right. Multiple enlarged left axillary lymph nodes noted, the largest measuring around 1.8 x 0.6 cm.
Tru-cut biopsy of both axillary lymph node and breast reveal a tumor composed of low cellularity and contain bland Schwann cells admixed with stromal cells such as mast cells, perineurial cells and fibroblasts. A few large fascicles of neurofibroma surrounded by perineurium forming thickened tortuous nerve branches. The extracellular matrix varies from loose and myxoid to more collagenous and fibrous areas containing a few lymphocytes and mast cells. The tumor is diffusely infiltrative and surround normal structures such as blood vessels or mammary ducts without distorting them. (Figure 2, 3)

Discussion
NF1 is associated with mutations, insertions or deletions in the NF1 gene, a tumor suppressor gene located on chromosome 17q11.2, and highly predisposed to spontaneous mutations. Substantial evidence supports that neurofibromin, the NF1 gene protein product, serves as a regulator in cell growth and differentiation [4].
The characteristic features of NF1 include Café au lait spots - occurring in nearly all affected individuals- intertriginous freckling, cutaneous neurofibromas, iris Lisch nodules, and choroidal freckling. Learning disabilities occur in al least 50% of individuals with NF1 [2]. To a lesser extent, NF1 can be associated with more serious conditions, such as, optic gliomas, scoliosis, vasculopathy, and malignant peripheral nerve sheath tumors [5]. Malignancies have been reported to be the most common cause of death in patients with NF1 [3].
A clinical diagnosis of NF1 can be established using the

diagnostic criteria for neurofibromatosis 1, designed by the National Institutes of Health [NIH 1988].

Using NIH criteria, children who have an affected parent, are usually diagnosed within their first year of life. Most likely, the first feature to develop is multiple café au lait spots, which develop during infancy in more than 95% of NF1 affected individuals [2].

Reportedly, neurofibromas of the breast are a rare manifestation of NF1, and when occurring the nipple-areolar complexes are usually involved. Although the clinical characteristics of NF1 are well appreciated, the course of the condition can be unpredictable from one individual to another [3].

The management of NF1 starts with early detection of the disease and includes symptomatic treatment of any complications, regular follow up and providing counseling for the patients and their families [5].

In our case of A-10-year-old, pre pubertal female, who is a known case of inherited NF1, presented with left breast mass. A biopsy of the lesion was obtained, and a diagnosis of neurofibroma was confirmed, on the basis of histopathological findings.

After a through review of the literature, and the reported cases, we found no cases addressing similar presentation in the pre pubertal female population, affected with NF1.

However, Several cases of gynaecomastia have been reported in NF1 affected pediatric male population. The youngest age reported was 16 months, in a study that showcased the diagnosis and therapy of unilateral gynaecomastia in NF1-affected male toddler [6, 8, 8].

A similar case to ours reported a pre pubertal 10-year-old, NF1 affected boy, who was diagnosed with breast neurofibroma, after surgical excision of the mass [8].

In regards to our patient, a major concern was the possibility of a malignant mass -sarcoma in particular- which would necessitate surgical intervention. A surgical procedure raised concerns for a possible damage to the breast tissue at her very young age. That being said, histopathological findings were reassuring and confirmed a benign neurofibroma. As this was the case, no interventions were required other then counseling and regular follow up at the out patient clinics.

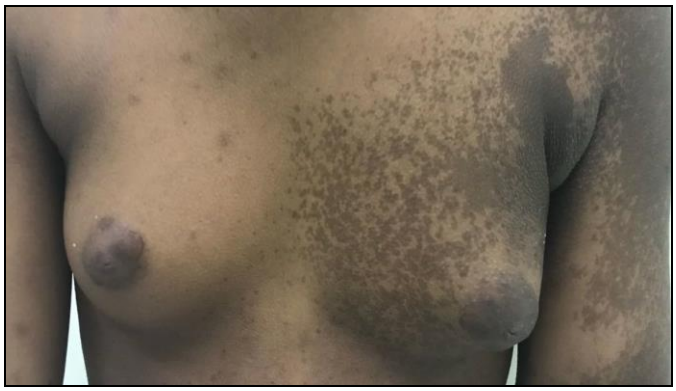


Fig 1: Left breast neurofibroma with multiple café au lait spots extending to the Left arm

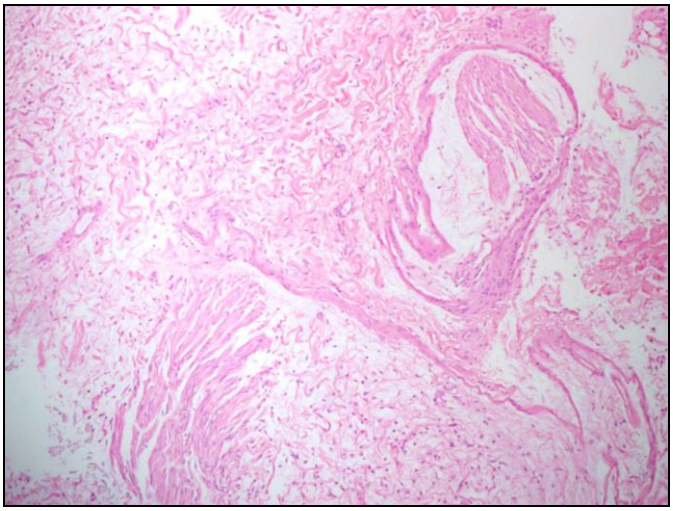
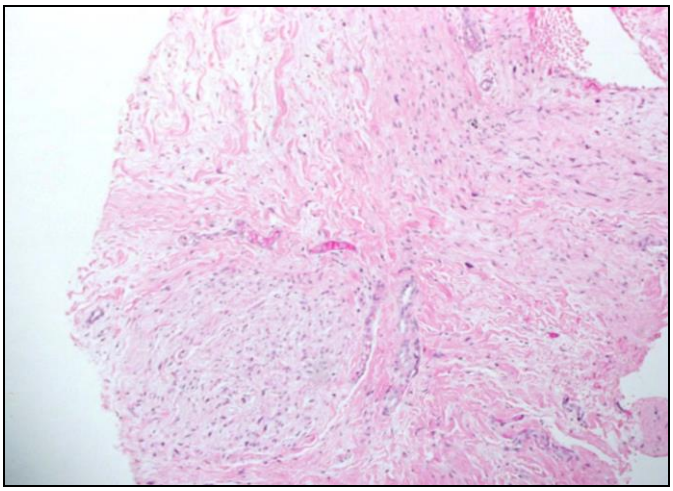


Fig 2: A tru-cut biopsy of the breast reveal diffuse benign spindle cell proliferation with Large fascicles of neurofibroma surrounded by perineurium embedded within a diffuse neurofibroma



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Conclusion

Our aim of this report is to present an unusual case. To the best of our knowledge no similar presentation for the pre-pubertal female population have been reported before. In addition to discussing the pathway from initial presentation, through diagnosis and finally initiating a management plan. As well as, to reflect on the possible outcomes of a breast mass in a pre-pubertal female with NF1.

References

1. Anderson JL, Gutmann DH. Neurofibromatosis type 1. Handb Clin Neurol. 2015; 132:75-86.
2. Friedman JM. Neurofibromatosis 1. 1998 Oct 2 Updated 2017 Nov 2. In: Adam MP, Ardinger HH, Pagon RA, *et al.*, editors. GeneReviews® Internet. Seattle (WA): University of Washington, Seattle; 1993-2017.
3. Bongiorno MR, Doukaki S, Arico M. Neurofibromatosis of the nipple-areolar area: a case series. J Med Case Reps.

2010; 4:22.
4. Boyd KP, Korf BR, Theos A. Neurofibromatosis type 1. Journal of the American Academy of Dermatology. 2009; 61(1):1-16.
5. North KN. Neurofibromatosis 1 in childhood. Semin Pediatr Neurol. 1998; 5(4):231-242.
6. Friedrich RE, Hagel C, Mautner V-F. Unilateral gynaecomastia in a 16-month-old boy with neurofibromatosis type 1 – case report and brief review of the literature. GMS Interdisciplinary Plastic and Reconstructive Surgery DGPW. 2015; 4:11.
7. Cho YR, Jones S, Gosain AK. Neurofibromatosis: a cause of prepubertal gynecomastia. Plast Reconstr Surg. 2008; 121(3):34e-40e.
8. Murat A, Kansiz F, Kabakus N, Kazez A, Ozercan R. Neurofibroma of the breast in a boy with neurofibromatosis type 1. Clin Imaging. 2004; 28(6):415-417.
9. Sharma R, Jain V. Bilateral breast enlargement in a male toddler: an unusual cause. Indian J Pediatr. 2009; 76(11):1164-1166.