Case Report

Neurofibromatosis Presenting as Painless Clitoromegaly

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INTRODUCTION

Neurofibromatosis is an autosomal dominant progressive disorder with an incidence of approximately 1 in 3000 live births.[1] Its recognized features include hyperpigmented skin lesions (cafe-au-lait spots), neurofibromas, iris hamartomas, macrocephaly, central nervous system tumors, defects of the skull and facial bones, and vascular lesions. Involvement of the external genitalia is extremely unusual.[1,2] We present a case of a neurofibroma of the dorsal clitoral hood and its management.

CASE REPORT

A 3-year-old girl presented to the pediatric urology clinic with the complaint of 8 months of painless clitoromegaly. She had been referred for concern of ambiguous genitalia and intersex state. The past medical and family history was unremarkable. Examination revealed a healthy female with multiple cafe-au-lait spots. Superficially, the clitoris appeared enlarged, but with further inspection, there was actually a 1.5 × 1.0-cm rubbery mobile mass of the dorsal clitoral hood lying over the normal glans clitoris. The patient's karyotype was determined to be 46,XX. Given the initial concern for ambiguous genitalia, a thorough endocrine evaluation was done which ruled out precocious puberty, congenital adrenal hyperplasia, and other hormonal causes of clitoromegaly. Her bone age was found to be appropriate and blood laboratory examination results were as follows: sodium, 138 mEq/L; potassium, 4.0 mEq/L; bicarbonate, 22 mEq/L; chloride, 105 mEq/L; urea, 12 mg/dL; creatinine, 0.4 mg/dL; free thyroxin, 1.4 ng/dL (reference range, 0.65 ng/dL to 2.30 ng/dL); thyroid-stimulating hormone, 2.45 μU/mL (reference range, 0.35 μU/mL to 6.16 μU/mL); 17-hydroxyprogesterone, $<$ 10 ng/dL (reference, $<$ 10 ng/dL); androstenedione, $<$ 10 ng/dL (reference, $<$ 10 ng/dL); and testosterone, $<$ 3.0 ng/dL (reference range, $<$ 10 ng/dL). Pelvic magnetic resonance imaging revealed a 1.8 × 0.8 × 2.0-cm well-circumscribed, pedunculated, nonlipomatous soft tissue mass within the subcutaneous tissues of the clitoral hood (Figures 1 and 2). Of note, no other pelvic masses or bladder lesions were noted.

The patient was examined under anesthesia by cystoscopy, and resection was attempted. During cystoscopy, no lesions were found within the bladder. However, the mass was found to be adherent to

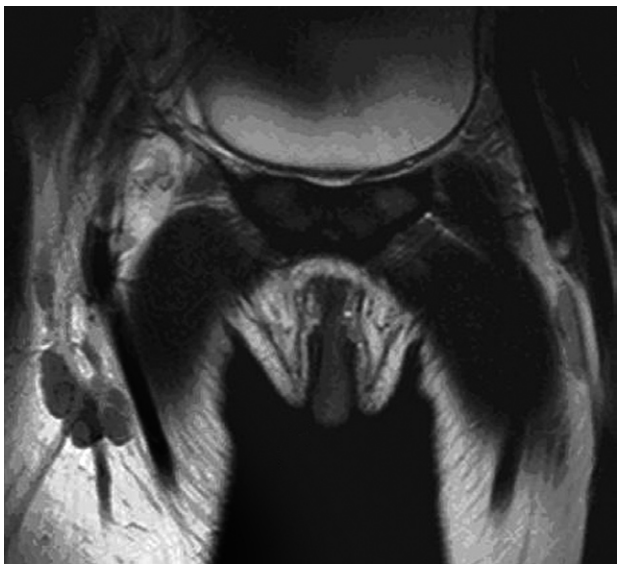

Figure 1. Coronal view of T2 magnetic resonance imaging of the pelvis demonstrating the mass arising from the dorsal clitoral hood

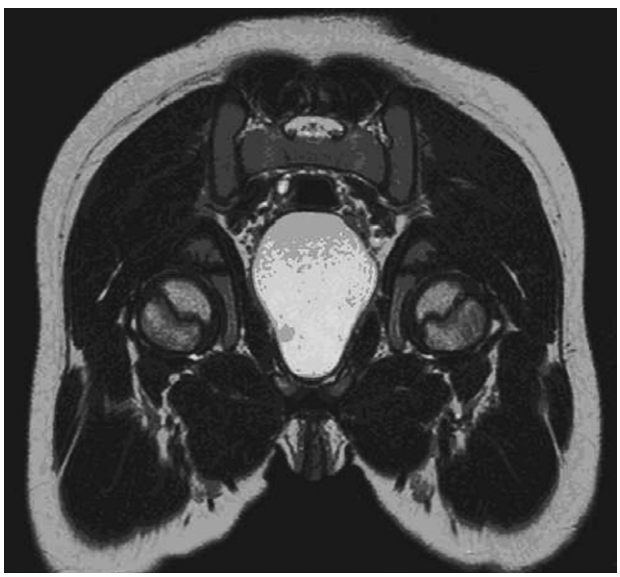

Figure 2. Axial view of T2 magnetic resonance imaging of the pelvis. Note the lack of bladder or pelvic involvement by neurofibromatosis

the clitoral corpora, but resection was possible without injury to the clitoris or the neurovascular bundle. Pathology examination revealed an infiltrating plexiform neurofibroma (Figure 3). Based on the presence of cafe-au-lait spots and the plexiform neurofibroma, the patient was diagnosed with neurofibromatosis 1. Additional imaging of the abdomen and brain did not reveal any further involvement. At 1-year follow-up, no recurrence was detected.

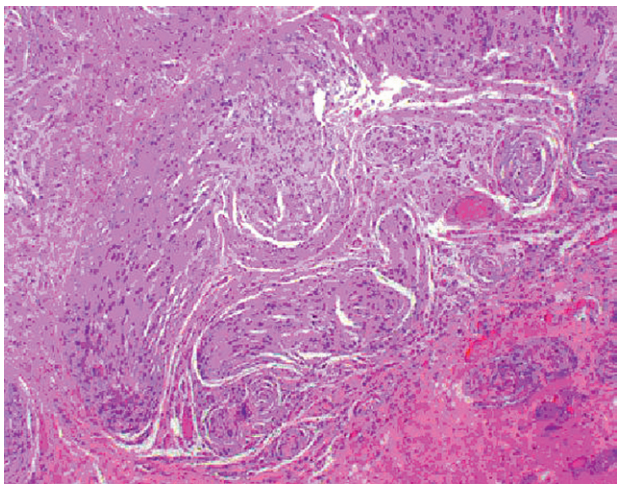

Figure 3. Tangential and cross-sections of enlarged nerve trunks form a plexiform mass in the clitoral tissue (hematoxylin-eosin, × 40).

DISCUSSION

Literature review demonstrated 27 previous reports of clitoral neurofibromas; however, only 1 was the involvement of the clitoral hood.[1,3] The other reports are of neurofibromas of the glans clitoris. The first description of clitoral neurofibroma was by Haddad and Jones in 1960.[4] A later report by Rink and Mitchell suggested that any child with genital neurofibromatosis be evaluated for bladder neurofibromas based on a few cases with involvement of both external genitalia and bladder.[1,2] Given the precision of the current imaging techniques, it is unclear if cystoscopy is still necessary. In cases of neurofibromas involving the female external genitalia, examination generally reveals clitoral enlargement resembling a phallus, and some patients report pain if presenting after puberty. Occasionally, this enlargement masquerades as an intersex disorder and is confused with virilizing congenital adrenal hyperplasia. Of the two pathological subtypes of neurofibromatosis, discrete nodular and plexiform neuromas, the plexiform subtype is more common in urogenital involvement.[5]

Overall, the incidence of malignant degeneration of neurofibromas ranges from 13% to 29%, which increases with age.[2] Thomas and colleagues reported a case of clitoral involvement by malignant schwannoma and described treatment with total surgical removal of the gross tumor.

Behavior of the malignant schwannoma is similar to other soft tissue sarcomas with a tendency towards local recurrence despite wide surgical excision and hematogenous spread.[6]

After review of this case and the existing literature, we recommend that management of a clitoral neurofibroma consist of excision with all attempts to preserve the clitoris and its adjacent neurovascular structures. We also recommend regular postoperative surveillance to monitor for local recurrence. However, no local recurrences have been described to date.

CONFLICT OF INTEREST

None declared.

REFERENCES

1. Griebel ML, Redman JF, Kemp SF, Elders MJ. Hypertrophy of clitoral hood: presenting sign of neurofibromatosis in female child. Urology. 1991;37:337-9.
2. Rink RC, Mitchell ME. Genitourinary neurofibromatosis in childhood. J Urol. 1983;130:1176-9.
3. Yüksel H, Odabaşi AR, Kafkas S, Onur E, Turgut M. Clitoromegaly in type 2 neurofibromatosis: a case report and review of the literature. Eur J Gynaecol Oncol. 2003;24:447-51.
4. Haddad HM, Jones HW Jr. Clitoral enlargement simulating pseudohermaphroditism. AMA J Dis Child. 1960;99:282-7.
5. Kaneti J, Lieberman E, Moshe P, Carmi R. A case of ambiguous genitalia owing to neurofibromatosis--review of the literature. J Urol. 1988;140:584-5.
6. Thomas WJ, Bevan HE, Hooper DG, Downey EJ. Malignant schwannoma of the clitoris in a 1-year-old child. Cancer. 1989;63:2216-9.