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Case Report

Isolated Familial Hemihyperplasia in an Hyperthyroid Patient: An Incidental Clinical Finding

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Abstract

Background: Isolated Familial Hemihyperplasia (IFH) appears to be infrequently reported due to its benign nature. The aim is to report a rare medical condition of Isolated Familial Hemihyperplasia in a Nigerian who presented with Hyperthyroidism and background ocular albinism. **Case report:** He presented with a year history of weight loss despite good appetite with associated palpitations, and ocular albinism. Clinical findings were in keeping with Hyperthyroidism. There was discrepancy in size of the upper limbs and lower limbs since childhood with similar findings in his two-year-old son. His thyroid function test confirmed hyperthyroidism. **Management:** His hyperthyroidism was appropriately managed. He was educated and counselled on the implications of the incidental diagnosis of Isolated Hemihyperplasia. He was advised to bring his two-year-old son for evaluation. **Conclusion:** Asymptomatic FIH usually present late or detected as incidental finding when the patient presents to the hospital on account of other medical conditions.

Keywords: Familial isolated hemihyperplasia, hyperthyroidism, thyroid disorder

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Introduction

Hemihyperplasia is a unilateral enlargement of a part of the body. Meckel in 1822 first described congenital hemihypertrophy which is also known now as hemihyperplasia.[1-3]It is described as asymmetric overgrowth in the upper limb, lower limb, face, entire half of the body with or without accompanying visceromegaly.[1-3] This can occur sporadically, could be familial or part of a syndromic illness such as Beckwith Wiedemann Syndrome (BWS), Russel Silver Syndrome, Neurofibromatosis type 1 amongst others.[1-3]Ballock et aldemonstrated that it may be difficult to determine the cause of enlargement whether it is due to an increase in the size of cells (hypertrophy) or to an increase in the number of cells of normal size (hyperplasia).[4]

The prevalence of Familial Isolated Hemihyperplasia is usually difficult to estimate as the condition is mild and benign. Leck et al in a study estimated the prevalence of both familial and syndromic forms of isolated hemihyperplasia as 1 in 13200 live births.[5] The apparent paucity of data on familial isolated hemihyperplasia is due to the predominance of the syndromic types of hemihyperplasia accounting for most of the available data. The familial types of isolated hemihyperplasia are mainly under diagnosis due to lack presentation to the hospital or late presentation. We report here a case of a young man who was incidentally found to have associated Familial Isolated Hemihyperplasia while being evaluated for Hyperthyroidism with background ocular albinism.

Case Report

A 41-year-old man Nigerian man, was referred to the Endocrine clinic on account of an abnormal thyroid profile result and discovered during medical evaluation to have an isolated hemihyperplasia with background ocular albinism.

He presented with history of unexplained weight loss, heat intolerance, excessive sweating and palpitation of a year duration. Three months prior to his presentation at the clinic, he noticed anterior neck swelling associated with hyperdefecation and exertional dyspnea. There was no orthopnea, paroxysmal nocturnal dyspnea or pedal edema. He has background ocular albinism from childhood with similar history in his uncles. There was no history of protrusion of both eyes but have refractive error of myopia on glasses.

His physical examination showed fine hand tremors with an incidental finding of a bigger right limbs compared to the left limbs. Further history showed that the discrepancy in size of the upper and lower limbs which have been there since childhood with similar finding in his two-year-old son with right lower limb hemihyperplasia. No similar findings in his siblings. He was not aware whether his father had similar condition as his father died when he was a little child, however no similar history in his mother. No other asymmetry or dysmorphic feature noted.

There was no macroglossia, café au lait macules, mental retardation or background psychiatric problem. He had no history of abdominal pain or swelling. He is not a known hypertensive or diabetic. There was no other known chronic medical condition. An initial assessment suggested Hyperthyroidism with incidental finding of Isolated Hemihyperplasia

His anthropometric indices are shown in Table 1. findings were remarkable for the Isolated Hemihyperplasia. His cardiovascular examination was abnormal with a radial pulse rate of 132beats per minute, regular and a blood pressure of 130/87mmHg.

Table 1. Anthropometric findings

Feature	Finding	Remarks
Height (m)	1.73	within normal limits
Weight (kg)	60	Normal for height
BMI (Kg/m^2)	20.05	Normal[6](18.5-24.9$kg/M^{2)}$)S
Arm span (m)	1.72	Normal
Using 6 cm from the head of the ulna Palmer width	Right hand 10.1cm Left hand 8.8cm	
Hand width difference (right greater than left) cm	1.3cm	Hemihyperplasia
Using 10 cm from the tip of the big toe Foot width	Right foot 14.8cm Left foot 13.3cm	
Feet width difference (right greater than left) cm	1.5cm	Hemihyperplasia
Crown -pubis (cm)	87	Normal pubis-crown
Pubis-heel (cm)	86	Normal
Upper segment/lower segment ratio	1.01	Normal
Waist-hip ratio	0.94	Normal for male

The thyroid ultrasound scan showed thyroid gland enlargement with a thyroid inferno pattern on color Doppler while abdominopelvic ultrasound scan was normal. His thyroid profile showed hyperthyroidism with elevated free T4 48.5pmol/L (7.2-16.14 pmol/L), elevated free T3 24.65pmol/l (3.8-6.0 pmol/L), TSH 0.05 Uiu/ml (0.36-6.0 Uiu/ml). He was commenced on oral propranolol 40mg twice daily and oral carbimazole 20mg twice daily.

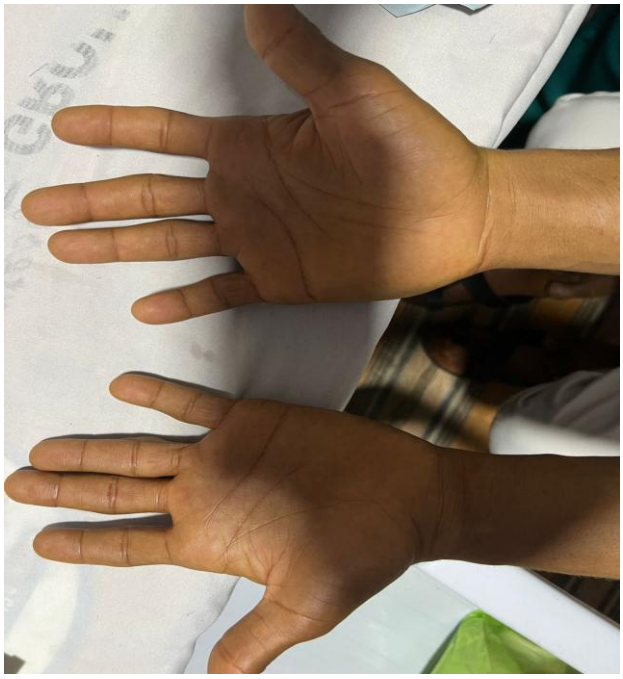

Image 1 showed a bigger right hand (flexor aspect) than the left hand
Using 6 cm from the head of the ulna
Palmer width Right hand 10.1cm and Left hand 8.8cm

Image 2 showed a bigger right hand (extensor aspect) than the left hand
Using 6 cm from the head of the ulna
Palmer width Right hand 10.1cm and Left hand 8.8cm

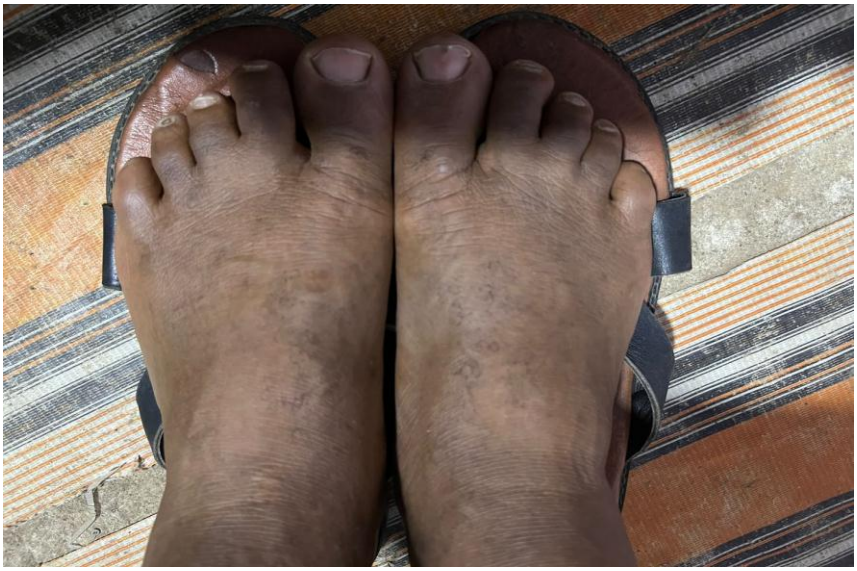

Image 3 image showing the feet with a bigger right foot compared to the left foot.
Using 10 cm from the tip of the big toe
Foot width: Right foot 14.8cm, Left foot 13.3cm

Image 4 showed the right hand bigger than the left hand

The aspects of management we focused on in the patient were on hyperthyroidism, its complications, ophthalmological care due to the background ocular albinism and the need for medical evaluation of his two-year-old son with right lower limb hemihyperplasia.

The management might involve the podiatrist in creating special shoes to accommodate the discrepancy in the feet sizes. Also, there might be need for special wears. In our index patient, he informed us that he usually gives his right shoe to the cobbler to expand for him as the shoe is usually tight and discomforting.

Our index patient was referred to the ophthalmologist and requested to do abdominal and thyroid ultrasound scans, electrocardiogram and thyroid autoantibodies, however he was lost to follow up care. He was also advised to bring his two-year-old son for medical evaluation who he claimed was healthy.

Discussion

A study by Parker et al, found ten cases with congenital asymmetry in a study population of 860,000 inpatients which showed the prevalence of hemihyperplasia to be approximately one in 86,000.[7,8] However, most of the patients included in this study had other congenital abnormalities, including BWS, hence the prevalence of FIH could not be determined. A similar study done in Tokyo on 14,430 consecutive live born infants found only one newborn with hemihyperplasia.[9]

The exact occurrence of FIH in Nigeria and other African countries is unknown as there has been no known report from the continent. Familial Isolated Hemihyperplasia is a benign condition and medical treatment is usually not needed in most condition. The limb discrepancy is mild and sometimes corrective shoes and orthopedic procedures may be needed to correct limb length discrepancy in few cases. Multispecialist involvement with evaluation of cognitive function, routine cancer screening and appropriate training may be needed especially when Isolated Hemihyperplasia is syndromic such as in Beckwith Wiedemann Syndrome (BWS), Russel Silver Syndrome, Neurofibromatosis type 1 amongst others.[7-9]

The prognosis of FIH is usually good as the condition is non progressive. A regular follow up for early detection of Wilms tumour is needed in children with Syndromic Hemihyperplasia.[10]The management might involve the podiatrist in creating special shoes to accommodate the discrepancy in the feet sizes. In the index patient usually gives his right shoe to the cobbler to expand for him as the shoe is usually tight and discomforting.

Studies have shown various reported cases of isolated hemihyperplasia seen in families. A study by Becze et al showed facial symmetries and strabismus in three serial generations which was autosomal dominant.[11] Stroll et al also demonstrated isolated hemihyperplasia in the mother and daughter.[12 Another study by Stavotinek et al showed the presence of hemihyperplasia in mother and son [13] while Rudolph & Norvold et al showed presence of facial asymmetry in child, mother and grandmother.[14]

The syndromic form associated with hemihyperplasia especially those associated with BWS can be diagnosed using genomic imprinting by G-band chromosomal analysis on peripheral blood film. Because of the risk of intraabdominal tumor, regular abdominal scanning is needed on 6 monthly bases to rule out Wilms tumor.[15-19]

Conclusion

Familial Isolated Hemihyperplasia is a non-progressive isolated hemihyperplasia which could involve the entire half of the body, upper limbs, lower limbs, facial asymmetry and tens to run in families. It could be associated with other background medical problems.

Declaration of Patient Consent
The authors certify that they have obtained all appropriate patient consent form. Patient has given his consent for clinical information to be reported with names and initials not published

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Conflict of Interest
There is no conflict of interest

References

1. Rowe NH. Hemifacial hypertrophy. Review of the literature and addition of four cases. Oral Surg Oral Med Oral Pathol. 1962;15:572–87
2. Khanna JN, Andrade NN. Hemifacial hypertrophy. Report of two cases. Int J Oral Maxillofac Surg. 1989;18:294–7.
3. Bueno I, Ventura P, Samper MP, Perez Gonzalez JM, Bueno M. Congenital hemihypertrophy. Genet Couns. 1993;4:231–4.
4. Ballock RT, Wiesner GL, Myers MT, Thompson GH. Hemihypertrophy. Concepts and controversies. J Bone Joint Surg Am. 1997;79:1731–8
5. Leck I, Record RG, McKeown T, Edwards JH. The incidence of malformations in Birmingham, England, 1950–1959. Teratology. 1968;1:263–80
6. Obesity and Overweight," Fact sheet no. 311, 2012, http://www.who.int/mediacentre/factsheets/fs311/en/.
7. Hoyme HE, Seaver LH, Jones KL, Procopio F, Crooks W, Feingold M. Isolated hemihyperplasia (hemihypertrophy): report of a prospective multicenter study of the incidence of neoplasia and review. Am J Med Genet. 1998;79:274–8.
8. Parker DASkalko RG. Congenital asymmetry: report of 10 cases with associated developmental abnormalities. Pediatrics. 1969;44:584–9.
9. Higurashi M, Iijima K, Sugimoto Y, Ishikawa N, Hoshina H, Watanabe N, Yoneyama K. The birth prevalence of malformation syndromes in Tokyo infants: a survey of 14,430 newborn infants. Am J Med Genet. 1980;6:189–94.
10. Viljoen D, Ramesar R. Evidence for paternal imprinting in familial Beckwith-Wiedemann syndrome. J Med Genet. 1992;29:221–5.
11. Bencze J, Schnitzler A, Walawska J. Dominant inheritance of hemifacial hyperplasia associated with strabismus. Oral Surg Oral Med Oral Pathol. 1973;35:489–500.
12. Stoll C, Alembik Y, Steib JP, De Saint-Martin A. Twelve cases with hemihypertrophy: Etiology and follow up. Genet Couns. 1993;4:119–26.
13. Slavotinek AM, Collins MT, Muenke M. Non-syndromic hemihyperplasia in a male and his mother. Am J Med Genet. 2003;121A:47–51. doi: 10.1002/ajmg.a.10177.
14. Rudolph CE, Norvold RW. Congenital Partial Hemihypertrophy Involving Marked Maloclusion. J Dent Res. 1944;23:133–139.
15. Fraumeni JF, Jr, Geiser CF, Manning MD. Wilms' tumor and congenital hemihypertrophy: report of five new cases and review of literature. Pediatrics. 1967;40:886–99.
16. Li M, Squire JA, Weksberg R. Molecular genetics of Beckwith-Wiedemann syndrome. Curr Opin Pediatr. 1997;6:623–9.
17. Weksberg R, Teshima I, Williams BR, Greenberg CR, Pueschel SM, Chernos JE, Fowlow SB, Hoyme E, Anderson IJ, Whiteman DA. Molecular characterization of cytogenetic alterations

associated with the Beckwith-Wiedemann syndrome (BWS) phenotype refines the localization and suggests the gene for BWS is imprinted. Hum Mol Genet. 1993;5:549–56.
18. Weksberg R, Squire JA. Molecular biology of Beckwith-Wiedemann syndrome. Med Pediatr Oncol. 1996;27:462–9.
19. Li M, Squire JA, Weksberg R. Overgrowth syndromes and genomic imprinting: from mouse to man. Clin Genet. 1998;53:165–70.