International Journal of Health Sciences and Research
Volume 14; Issue: 4; April 2024
Website: www.ijhsr.org
Case Report *ISSN: 2249-9571*

Cushing's Syndrome Secondary to Steroid Abuse

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DOI: https://doi.org/10.52403/ijhsr.20240422

ABSTRACT

Introduction: Cushing's syndrome, a rare endocrine disorder may result from exogenous administration of steroids.
Case Report: E.P, 4 years old female presented to RSUTH at 3 years 7 months with complaints of speech delay and difficulty standing from sitting position. She had left convergent squint, Grade 3/6 systolic murmur and proximal muscle weakness. Initial diagnosis was 'Duchenne muscular dystrophy and Acyanotic congenital heart disease'. Echocardiography revealed Atrial and Ventricular Septal Defects. Creatine kinase was normal. She was placed on tabs prednisolone, furosemide, spironolactone and physiotherapy; counselled and booked for follow-up in 2 weeks. She defaulted from follow-up and continued to give Prednisolone. Five months later, she presented to the Cardiology clinic with excessive weight gain and breast development. She had moon face, truncal obesity, and elevated BP. She was referred to the Endocrinology clinic where, in addition, cushingoid appearance, hirsutism, acanthosis nigracans, a hump, striae, with a left convergent squint were noted. Breast was Tanner stage 2. Diagnosis was Cushing's syndrome secondary to Steroid Abuse, Stage 2 hypertension, Premature thelarche? Diabetes mellitus? Pituitary tumour. Brain MRI and abdominal USS were normal. HbA1c was elevated, insulin, C-peptide and Adrenocorticotropic hormone (ACTH) levels were reduced. Other hormonal indices were normal. She was given tabs Amlodipine and Prednisolone stopped. She steadily improved. Six months later, her blood pressure and sugar had normalized.
Conclusion: Cushing's syndrome though rare may occur secondary to steroid abuse. Strict compliance to doctor's prescription and follow up cannot be over emphasized.

Key words: Cushing's, Syndrome, Steroid, Abuse

INTRODUCTION

Cushing's syndrome is a rare, multisystemic endocrine disease due to excessive glucocorticoid hormone production that result from either exogenous or endogenous aetiologies.[1] Exogenous causes occur due to prolonged use of high dose of medications mostly prednisolone in the management of non-endocrine disorders.[1-2] This is the most common cause in the pediatric population.[2-3] Endogenous causes can be either Adrenocorticotropic hormone (ACTH)-dependent or ACTH-independent Cushing's syndrome. ACTH-dependent hypercortisolism

is mostly from pituitary ACTH secreting tumors and is known as Cushing disease. Others are ectopic Corticotrophin-releasing hormone (CRH) and/or ACTH secretion. ACTH-independent hypercortisolism result from the adrenals causes such as the adrenocortical carcinomas and cortisol-producing adrenocortical adenomas.[4]

Endogenous causes are relatively rare in children and adolescents; with an overall incidence of 0.7-2.4 per million in the general population per year[5] and only 10% of new cases occur in children each year.[6] Cushing disease is more prevalent in children over 5 years of age and accounts for 75-80% of Cushing syndrome cases in children; with most cases occurring in boys[6-7]; 15- 70% are due to ACTH production from non-pituitary tumors and <1% are due to CRH producing tumors.[8] There is paucity of data in the Africa region. However, there are few case reports of children who had Cushing's syndrome in Nigeria.[9-12]

In this present study, we report a case of Cushing's syndrome which occurred as a result of steroid(prednisolone) abuse.

CASE REPORT

E.P, a 4 years old female, presented to Rivers State University Teaching Hospital (RSUTH) at 3 years 7 months of age with complaints of speech delay and difficulty in standing from a sitting position. She had a left convergent squint, Grade 3/6 early systolic murmur and proximal muscle weakness. Initial diagnosis was 'Duchenne muscular dystrophy and Acyanotic congenital heart disease'. Echocardiography done showed Atrial and ventricular Septal Defects, and Creatine kinase was requested for. She was placed on tabs Prednisolone 10mg bd for 2 weeks, Furosemide, Spironolactone and physiotherapy; counselled and booked for follow-up in 2 weeks. Creatine kinase result when eventually ready was normal thus excluding Duchenne muscular dystrophy as a possible diagnosis.

She, however, defaulted from follow-up and mother continued to give her tabs Prednisolone along with her anti-failure drugs (furosemide and spironolactone). Five months later, she presented to the Cardiology clinic with excessive weight gain and breast development. She was obese, had moon face, truncal obesity, and elevated BP. She was referred to the Endocrinology clinic where, in addition, cushingoid appearance, hirsutism, acanthosis nigracans, a hump, striae, with a left convergent squint were noted. Breast development was Tanner stage 2. She had also developed pubic hair -Tanner stage 2. Random blood sugar done was elevated. A diagnosis of Cushing's syndrome secondary to Steroid Abuse, Stage 2 hypertension, Premature thelarche,? Diabetes mellitus to rule out a Pituitary tumour was made. Brain MRI and abdominal USS were normal. Random blood sugar and HbA1c was elevated; insulin, C-peptide and ACTH levels were reduced. Other hormonal indices were normal. She was given tabs Amlodipine and Prednisolone was stopped. She steadily improved. Six months later, she was no longer cushingoid in appearance; and her blood pressure and random blood sugar had normalized.

PICTURES

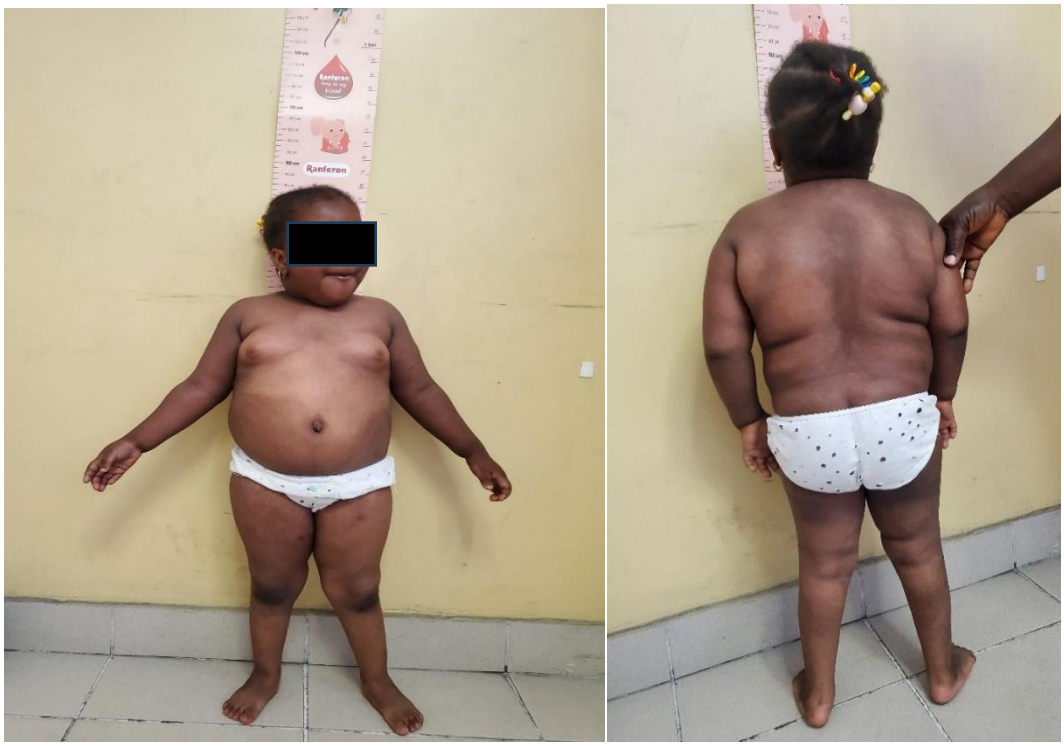

Fig. 1: EP at presentation

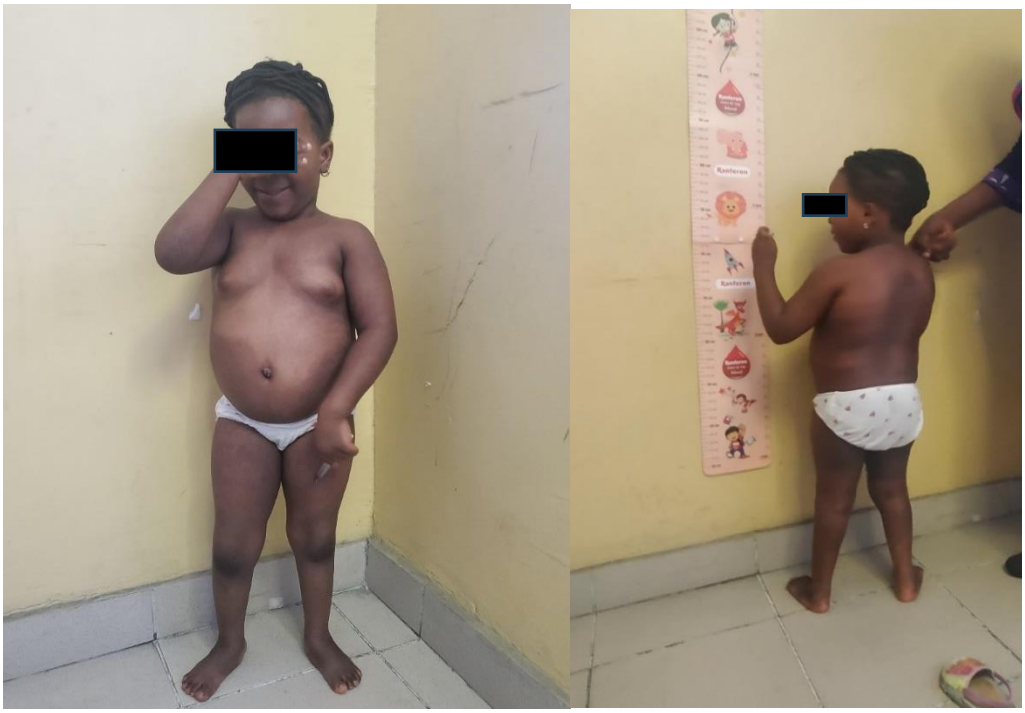

Fig. 2: EP 3 months after cessation of oral steroids

DISCUSSION

Our patient presented to the endocrinology clinic at 4 years of age. Though rare, Cushing's syndrome (CS) has been reported in children. [1-13] Aitafo et al reported Cushing's syndrome as being responsible for <1% of all cases

presenting in the Paediatric Endocrinology clinic in South-south Nigeria. [12] This is similar to that reported by Tamunopriye et al where CS was responsible for 0.5% of all cases seen. [14] She presented with weakness, cushingoid appearance, moon face, truncal obesity, hirsutism, acanthoses nigracans, a hump, striae and pseudo breast enlargement-tanner stage 3. She also had stage 2 hypertension with elevated blood glucose. This is consistent with common manifestations of Cushing's syndrome reported- obesity, moon face, hirsutism, muscle weakness, hypertension and glucose intolerance. [13,15] Hypertension is seen in up to 80% of patients with CS and correlates with the duration of hypercortisolism.[16] Azzoug et al reported hypertension in 67% of patients with CS, 33% of whom had glucose intolerance.[17] Following cessation of tabs Prednisolone and administration of Amlodipine, her blood sugar level and blood pressure were restored to normal.

Azzoug et al [17]reported adrenal adenomas as being responsible for 18% of cases of CS. However, USS done in our patient showed normal adrenals. Brain MRI was essentially normal. ACTH secreting pituitary adenomas though very rare (incidence of 1-2 per million) are responsible for 70 % of all endogenous causes of Cushing's syndrome. [11, 18] However our patient's Brain MRI was normal.

Our patient developed Cushing's syndrome secondary to oral corticosteroid-prednisolone abuse. Her mother continued giving her prednisolone for several months and only presented in the hospital when she became concerned about the excessive weight gain. Several authors have reported Cushing's syndrome secondary to prolonged and inappropriate use of potent topical corticosteroids [13,19,20] as well as nasal steroid in children.[9]

Our patient had features suggestive of a Pseudo-precocious puberty as her breast were enlarged -Tanner stage 2 and she had developed pubic hair -Tanner stage 2. This is similar to that reported by Oluwayemi et al [9] in which a 19 months old boy who was given Aristobet-N (Bethamethsone + Neomycin) nasal spray developed excessive weight gain, pubic hair and markedly reduced ACTH and Cortisol levels. He was found to be obese, had a moon face and had a testicular volume of 1ml. He had received 6 bottles of the drug over 3 months. They also reported a 4 months old baby who presented similarly after his mother had administered 21 bottles of aristobet-N over 7 weeks as treatment for adenoidal hypertrophy. Both children lost weight significantly and had regression of their symptoms and signs 3 months after cessation of the nasal steroid.[9] Our patient and these reported cases highlight the need for proper patient education and public enlightenment on the importance of drug compliance and the dangers of drug abuse/misuse.

CONCLUSION

Cushing's syndrome though rare may occur secondary to steroid abuse. Strict compliance to doctor's prescription and follow up cannot be over emphasized. We recommend patient and public enlightenment on the importance of drug compliance and the risks of steroid abuse.

Declaration by Authors

Acknowledgement: None
Source of Funding: None
Conflict of Interest: The authors declare no conflict of interest.

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How to cite this article: Josephine Enekole Aitafo, Sotonye Peace Imafidon, Uchenna Onubogu. Cushing's syndrome secondary to steroid abuse. *Int J Health Sci Res.* 2024; 14(4):157-162. DOI: *https://doi.org/10.52403/ijhsr.20240422*

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