Case Report

Precocious Puberty: Case Report of a 3-Year Old Girl

Adze J A,¹ Bature S B,¹ Durosinlorun A M,¹ Caleb M,¹ Taingson M C,¹ Silas B T.²

¹Department of Obstetrics and Gynaecology, Barau Dikko Teaching Hospital, College of Medicine, Kaduna State University (KASU).

²Department of Radiology, Barau Dikko Teaching Hospital, College of Medicine, Kaduna State University.

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*Correspondence:

Joel A. Adze, Department of Obstetrics and Gynaecology, Barau Dikko Teaching Hospital, College of Medicine, Kaduna State University (KASU), +2348037871472.
Email: joeladze@yahoo.com

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ABSTRACT

Precocious puberty is the onset of puberty before the age of 8 years in girls and 9 years in boys. There is a global trend towards earlier onset of puberty. The prevalence is not known in Nigeria. Precocious puberty has implications such as inappropriate body appearance, psychological effects and decreased final height. This is a rare case report of a 3-year-old girl who presents with precocious puberty. Investigations did not reveal the cause. Investigations and treatment are expensive and a challenge in a poor resource setting. Early diagnosis and treatment are recommended to reduce the complications associated with it.

Keywords: Early, Diagnosis, Treatment, Height, Precocious puberty.

INTRODUCTION

Precocious puberty is the onset of puberty before the age of 8 years in girls and 9 years in boys.¹ Over the past few years, there has been a clear secular trend towards earlier onset of puberty.^{2,3} Puberty leads to increased levels of estradiol which causes progressive breast enlargement, pubertal growth spurt and rapid bone age advancement.⁴ Some studies in Nigeria have documented age at menarche at 12 years in Lagos, 12.5 years in Enugu.⁵ Prevalence is unknown in Nigeria with only a few reported cases probably because of superstitions and religious beliefs among parents of affected children.⁶ This case report brings to light the possibility of central precocious puberty at a much younger age than 8 years and the challenges in diagnosis including treatment in a low resource setting. It is a rare case and there are only a few reported such cases in Nigeria.

CASE REPORT

A 3-year-old girl was brought to the gynaecological clinic by her mother complaining that she had noticed her developing large breasts about 10 months earlier. This was followed by the growth of pubic hairs and about 4 months later, she started menstruating. Menses occurred 3-4 months apart. This abnormal development was

attracting comments from her peers and neighbours. This was a source of apprehension to the family. There was no history of headache, visual defect, trauma or administration of any exogenous drugs and treatment. The past medical history revealed nothing of note. She was the first of two children in the family. The second was a 1-year-old girl. She was delivered at term by spontaneous vaginal delivery in a health facility. Pregnancy had been booked and she had full antenatal care with no complications. There were no neonatal problems. She had all scheduled immunizations for her age.

There was no known similar family history.

Physical examination showed an alert child. Her height was 1.18m and weight 24kg with a BMI of 17.24kg/m².

Breasts were well developed, full with enlarged nipples (Tanner stage V). (Figure 1)

Axillary hair were scanty (Figure 2). Systemic examination showed nothing of significance. A pelvic examination showed scanty slightly pigmented hair over the mons pubis (Tanner stage I). Both labia majora and minora were well developed and the

hymen was intact. (Figure 3),

A CT scan of the abdomen done showed the adrenal

Figure 2: Scanty axillary hair

Figure 1: Fully developed breasts

Figure 3: Normal external genitalia

glands to be normal in position, size shape and outline with no adrenal gland lesion or collection seen. The kidneys were normal in size, position and parenchymal density. A CT urogram demonstrated prompt and satisfactory excretion of contrast medium. The ovaries were poorly visualized though no adnexal mass seen, while the uterus measured 2.1cm in AP diameter. A brain MRI done showed normal cerebral and cerebellar hemispheres. The sella turcica and pituitary gland were within normal limits and no calcification or bony erosion seen. The ventricular systems and cisterns were within normal limits.

Her urea, electrolytes and creatinine were normal. Hormonal assays including LH, FSH, estradiol, prolactin, and progesterone were within normal adult ranges. Serum testosterone was 0.06 ng/ml and within the female normal range of less than 0.80ng/ml. The parents could not afford to pay for the investigations and depended mostly on financial assistance. Four months after, they could not afford to purchase prescribed gonadotrophin-releasing hormone analogues. A written informed consent was obtained from the mother to publish this report with the accompanying images.

DISCUSSION

Puberty is a developmental stage characterized by physical and psycho-social maturation.¹ Hence, abnormal pubertal timing such as precocious puberty can adversely affect a child's physical and psychosocial well-being.² There can be anxiety about breast development and other physical differences from peers.⁷

Central precocious puberty could be genetic with an autosomal-dominant inheritance.⁴ There was no positive family history in this patient. Improved nutrition is considered the primary reason for the secular decrease in pubertal age and over-weight girls tend to have earlier menarche than girls with normal weight hence the need to measure the BMI in the evaluation of girls with precocious puberty.⁴ This

patient's low BMI and thus poor nutrition do not explain the early onset of menarche.

One of the major recent causes of early puberty onset could be extensive exposure to estrogenic chemicals in the environment such as organochlorine pesticides.³ Exposure during gestation has an impact on the timing and tempo of puberty.³ Though exposure to exogenous estrogen could not be established in this patient, Nigeria is one of the highest users of pesticides in Sub-Saharan Africa.⁸

A major concern in precocious puberty is the underlying condition, and central nervous system or gonadal neoplasm have to be formally excluded as a first step in the diagnosis.⁹ In this patient an MRI and CT scan of the brain and adrenals excluded these. Her hormonal profile were all within the adult female ranges. From the investigations, no cause could be identified. This is not surprising since about 90% of cases of precocious puberty in girls are idiopathic.¹⁰

A secondary concern is height, since precocious puberty leads to accelerated growth, accelerated bone development and ultimately reduced stature.⁹ Her height of 1.18m was rather above the WHO means of 0.95m for her age. This may be worrisome as she could have experienced a growth spurt, and epiphyseal closure could herald an eventual short stature.

This patient's physical appearance had drawn embarrassing comments from her neighbours and peers. Although short stature is the end result of precocious puberty, treatment options will also consider the presence of psychological and behavioural disorders that could be present.¹ Early pubertal development is a common cause of parental anxiety.¹⁴ The parents of this patient had been worried and embarrassed at her physical changes.

There are some case reports of sexual abuse and early pregnancy in precocious puberty.¹ Hence there is no hesitation about the initiation of treatment below the age of 7 years.¹ Gonadotrophin-releasing analogues were prescribed as the benefits of treatment are greater in girls who are identified and treated at a younger age.³ Four months later she was unable to purchase the

medicines because of financial constraints.

The parents of the patient were counselled to protect her against rape and sexual assault since her accelerated sexual maturity may be attractive to persons with such intent.

CONCLUSION

Most cases of precocious puberty in girls are idiopathic and investigations including treatment are expensive and hence challenging. Investigations and treatment should be started early to reduce complications associated with it, otherwise, patients will have to live with its short and long term complications.

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