Original Research Paper

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Paediatrics

UNCOMMON MANIFESTATIONS OF A COMMON ENDOCRINE DISORDER

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ABSTRACT Hypothyroidism in children can have deleterious effects on growth, pubertal development and scholastic performance. In India, there is a paucity of data on acquired hypothyroidism in children in contrast to congenital hypothyroidism. Our objective through this case series is to present three cases of hypothyroidism in children and adolescents with uncommon manifestations

KEYWORDS : Hypothyroidism, pericardial effusion, ovarian cysts

INTRODUCTION

One of the most prevalent endocrine disorders in children is hypothyroidism. Hypothyroidism may be due to congenital or acquired causes; the latter is generally referred to as juvenile hypothyroidism (JH). In India, the incidence of congenital hypothyroidism is estimated to be 1:2640 live births[1], and thyroid dysgenesis is the most common cause. In a hospital-based study of 100 hypothyroid children in a developing country, only 9% were acquired, indicating that acquired hypothyroidism in children is less prevalent.[2] Thyroid hormones are indispensable for fetal and postnatal growth, development, pubertal development and for neuropsychological functioning[3]; thus explaining deleterious effects on growth, pubertal development, and school performance in children with hypothyroidism. Diagnosis of hypothyroidism in children requires a high index of suspicion[4] as it can present as a spectrum of common and uncommon clinical features. We present three cases of a common condition presenting in unusual ways in different age groups.

CASE REPORT

CASE 1

A 16 year old girl presented with complaints of mass in perineal area with vaginal bleeding (which lasted for 7-8 days). After thorough clinical examination and investigations as stated in Table 1, she was diagnosed with congenital hypothyroidism (thyoid digenesis) with discordant puberty (vaginal bleeding without breast development) also referred as Van Wyk-Grumbach syndrome with clitoral angiomyxoma.

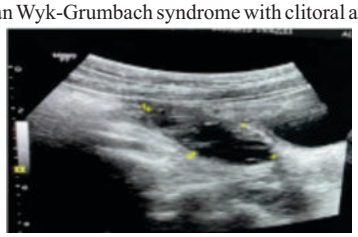

Figure 1: USG abdomen and Pelvis of Case 1 showed Uterus – 1.3*1.2*1.0 cm (prepubertal) Multiple cysts in bilateral ovaries

CASE 2

A 14.3 years old girl presented in PICU with difficulty in breathing and cough. A detailed examination and investigation confirmed a diagnosis of autoimmune thyroid disease with pericardial effusion with cardiac tamponade. Oral thyroxine was started with urgent pericardial tapping.

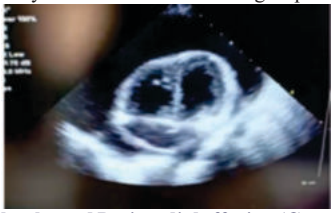

Figure 2:2D echo showed Pericardial effusion (Case 2).

CASE 3

An 8.6 year old female child reported with chief complaint of acute abdominal pain. She was diagnosed to have Hypothyroidism with left ovarian complex cystic lesion after detailed examination and investigations (Table 1). Cystectomy with oral supplementation of thyroxine was initiated which reported in improvement of symptoms.

DISCUSSION

We here report three cases of hypothyroidism (congenital/ acquired) with varied presentation. The first case had congenital hypothyroidism whereas the second and third cases in our case series were juvenile (acquired) hypothyroidism (Autoimmune thyroid disease).

Van Wyk - Grumbach syndrome (VWGS) is a rare disorder which is a diagnostic challenge, because long-standing primary hypothyroidism in children is known to cause delayed puberty as well as growth delay, whereas, in this rare syndrome, hypothyroidism leads to growth delay with paradoxical precocious puberty. The salient diagnostic features include long-standing hypothyroidism with high levels of TSH, isosexual precocity with lack of public and axillary hair growth, and delayed bone age. The precocious puberty is always isosexual and incomplete in patients of VWGS. The most common cause of hypothyroidism in these patients is autoimmune thyroiditis, however in our case it was congenital type. Thus, VWGS can be diagnosed nonoperatively, by the recognition of the salient clinical features and appropriate confirmatory endocrine laboratory tests.[5]

The first case in the case series was a 16 year old female diagnosed with Van Wyk-Grumbach syndrome. The presence of precocious puberty and enlarged ovaries suggested an estrogen-secreting ovarian tumor in the present case. But the finding of a delayed bone age in the patient with precocious puberty narrowed the differential diagnosis to long-standing hypothyroidism. High circulating levels of TSH along with prepubertal LH levels suggested Van Wyk–Grumbach syndrome. Similar cases were reported by Rastogi A et al.[6], Naznin L et al.[7] & Baranowski E et al.[8] The third case in the case series was an 8-year-old female patient diagnosed with ovarian cyst with hypothyroidism and had delayed growth. High FSH level in long standing hypothyroidism (molecular mimicry) is responsible for ovarian cysts. Complex ovarian cysts as witnessed in our case is more common in peri-pubertal or pubertal girls but our case was a pre-pubertal girl. W Zhu et al.[9], reported a similar case report of a 14-year-old female patient suffering from primary hypothyroidism in combination with bilateral cystic ovaries.

Lastly, the second case in our case series was a 14 year old female diagnosed with Autoimmune thyroid disease with pericardial effusion. Pericardial effusion in hypothyroidism is considered to be a part of the generalised polyseropathy and the accepted pathogenic mechanism being a combination of extravasation of albumin and inadequate lymphatic drainage accounting for exudative nature of the accumulated fluid in this disorder. Reduced thyroid function causes increased protein extravasation and relatively slow lymphatic drainage. This leads to myxoedema with fluid accumulation in serous

cavities, including the pericardial cavity. This was in concurrence with cases as reported by Sanda S et al.[10] and Levy et al.[11] presenting with apparent idiopathic pericardial effusions may identify occult cases of hypothyroidism. It was concluded that laboratory screening for hypothyroidism in children.

CONCLUSION

Here we reported a series of cases of hypothyroidism with uncommon manifestations, highlighting the desirability and importance of early recognition and timely treatment with adequate thyroid replacement therapy in these young patients.

A mandatory practice of newborn screening for identifying the congenital hypothyroidism for all newborns should be incorporated in practice.

Table 1: Summary of Case reports

	Case 1	Case 2		Case 3		
Age	16 years	14.3 years		8.6 years		
Sex	Female	Female		Female		
Chief complaints	-Mass in perineal area since 6 months -Vaginal bleeding (lasted 7-8 days; 15 days back) -Lethargy, -Constipation -Poor scholastic performance -Not gaining height	-Difficulty in breathing increased since 2 days (present since 5-6 months) -Fever since 2 days -Cough since 8-10 days -H/O lethargy since 1-2 years -Not gaining height		-Acute abdominal pain		
Developmental History	Global developmental delay present Mental age ~ 8 years	Normal developmental history		Normal developmental delay		
Anthropometric examination						
Weight	26 kg (-3.3 SD)	35 kg (-1.2 SD)		18 kg (-1.8 SD)		
Height	95 cm (-12.3 SD)	117 cm (-5.6 SD)		114 cm (-2.2SD)		
BMI	16.6 kg/m2 (2.3 SD)	21.9 kg/m2 (0.7 SD)		13.8 kg/m2 (-0.8 SD)		
Clinical Examination						
Heart Rate	56 bpm	80 bpm		72 bpm		
BP (mm Hg)	100/62	98/74		100/62		
Others		RR- 40/ minute SpO2- 96% (room air) JVP- raised (7cm above sternal angle)				
Tanner Stage	A1P1B1B1M1	A1P1B1B1M0		A1P1B1B1M0		
Clinical Findings	Puffy face Dry skin & hair; Dull look No goiter Umbilical hernia Keratinized mass (superficial), urethral & vaginal openings appreciated	Pulsus paradoxus +; Hepatojugular reflex+ B/L Non pitting Paedal edema Bilateral air entry equal & clear; no added sounds; liver 3 cm below coastal margin CVS- Muffled heart sounds. No murmur		Abdominal distention, bipedal edema, generalized skin xerotic patches & edematous lips		
Investigations						
Haemoglobin	10.2 mg/dl	Low	8.2 mg/dl	Low	7.7 mg/dl	Low suggestive of Microcytic Anemia
TLC	10200	Normal	11200	Normal	17500	High
MCV/ MCH	98/31	High	102/30	High	98/34	High
TSH (IU/L) Free T4 (ng/dl) (0.9-1.6)	1596 0.3	High Low	>100 0.5	High Low	>100 0.7	High Low
Anti-TPO antibodies	1.2 IU/L	Negative	110 IU/L	Positive	225 IU/L	Positive
LH FSH	0.01 IU/L 8.4 IU/l		0.02 IU/L 0.3 IU/L		<0.1 IU/L 9.6 IU/l	
LDH					600 U/L	
Bone age	7 years (TW-3)	Delayed	7.6 years (TW-3)	Delayed	6 years (TW-3)	Delayed
USG Thyroid	B/L lobes of thyroid- hypoplastic	Normal thyroid gland		Normal thyroid gland		
USG/CT abdomen	Uterus – 1.3*1.2*1.0 cm (prepubertal) Multiple cysts in b/l ovaries, largest measuring 12 mm	NA		Left Ovarian cyst measuring about (7.7*7.6*7.5 cms)		
2 D-Echo	NA	Massive pericardial effusion with Tamponade LVEF- 60%		NA		
Diagnosis	Van Wyk-Grumbach syndrome (Hypothyroidism with discordant puberty with clitoral angiomyxoma	Autoimmune thyroid disease with pericardial effusion		Hypothyroidism with left ovarian complex cystic lesion.		
Treatment	Started on thyroxine @ 25 mcg/ day (1 mcg/kg/day). -Excision and biopsy of keratinized vaginal mass was done after TSH normalisation.	Started on tablet thyroxine @ 37.5 mcg/ day (1.1 mcg/kg/day). Urgent Pericardial tapping was done and 450-500 ml of fluid was drained. Repeat 2 D- echo showed Normal LV function with mild pericardial effusion.		Oral thyroxine was started with urgent cystectomy		

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