



Methylphenidate and Precocious Puberty

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Introduction

Attention Deficit Disorder & Hyperactivity Syndrome (ADHD) is identify attention deficit ,impulsivity hyperactivity before the age of seven years old..ADHD is a serious disease which could cause corruption of daily lifetime and needed to be taken *psychostimulant drugs*. Last researches conducted shows us consuming psychostimulant drugs in the childhood causes doubling the drug consuming in every five year. *This case brings on that these kind of drugs can have unexplored side effects* .In this study; it was reported 7 precocious puberty (PP) cases which used methylphenidate (MF) due to ADHD and investigated interrelation between methylphenidate and precocious puberty.

Material and Methods

This study consisted 7 cases which used MF due to ADHD. All the cases with various pubertal complaints were admitted to our Dept of Pediatric Endocrinology. All cases were performed family history, a detail physical examination(pubertal staging and anthropometric evaluations). Puberty precocious (PP) was diagnosed on the appearance of breast development before the age of 8 years in girls and testes enlargement before 9 years in boys. The initial evaluation of cases with PP included determinations of height, weight, pubertal stage(Tanner), bone age, pelvic ultrasound, neuroradiological imaging and evaluation of the hypothalamic-pituitary-gonad axis by measuring basal and GnRH stimulated LH and FSH peaks and the plasma concentration of estradiol.

Results

The study group consisted 7 precocious puberty (PP) cases (4 girls,3 boys; the mean age 10.7 ± 2.9 years old) with ADHD. Breast development in 4 girls and penil and testis enlargement in 3 boy cases were determined.. Duration of complaints were in between 2 and 6 months in all the cases. All the patients were used MF treatment due to ADHD (min6-max12 month) Basal hormonal levels (thyroid-surrenal-prolactin) were normal range. Results of LHRH stimulation tests in all the cases were demonstrated central pubertal responses. Radiologic evaluations of hypotalomohypophysial region were normal in all the cases. One of the cases which developed rapidly pubertal progression in follow-up was started on GnRH analoque therapy. The other cases were not put on treatment for CPP

TABLE -1 -2 :Anthropometric and hormonal evaluation of all cases

	case 1	case 2	case 3	case 4	case 5	case 6	case 7
Age	7 y 11 m	7 y 6 m	8 y 2 m	7 y 9 m	8 y 6 m	8 y 10 m	8 y 6 m
	MF/12	MF/10	MF/8	MF/9	MF/9	MF/9	MF/6
Weight	>97p	75-90p	>97 p	90-97p	75p	50p	90p
Height	75-90p	25 p	90-97p	50-75p	50p	50p	25-50p
BMI	>97p	25p	90p	25-50p	50-75p	75-90p	90p
Telarch	Bilateral T2	wrightT3/ left T2	Bilateral T3	wrightT3/ leftT2			
Testes					3/4	3/4	4/4
BA	9 year	9 year	10 year 6	10 year	9year	14.5year	14.5year
BA/CA	1.14	1.19	1.3	1.27	1,05	1.1	1.16
Target	162 cm	163 cm	167 cm	168 cm	166.3 cm	166.3 cm	159.85cm
PAH	160 cm	161 cm	166cm	165 cm	181 cm	163.8 cm	161.2 cm

Conclusion

Precocious puberty is losing activity of center suppressor system on GnRH neurons and the activation of hypothalamus-hypophysis-gonad as a result of the prominence of the excitatory systems. Glutamine, dopamine and noradrenaline are most important excitatory neurotransmitters that have a role in the starting of puberty. Depending on the effect of methylphenidate cumulating of dopamine and noradrenaline in the synaps gap could cause inducing puberty This is the excitatory effect of dopamine and noradrenaline's on the GnRH release and addition antiprolactinergic effect mechanisms may be connected. As a result; using psychostimulant drugs at childhood may accelerate puberty.

	case 1	case 2	case 3	case 4	case 5	case 6	case 7
	F	F	F	F	M	M	M
E2/ T	13	18	44	16	2,3	6,95	4,49
LH	0.6	0.26	2.5	0.4	0,31	2,85	2,56
pLH	23.76	7.5	6.4	6.8	5.5	7.1	5.6
17OHP	1.21	0.52	1.51	0.65	1.02	2.51	2.29
DHEAS	30.36	48	82	79	40.5	131	269
ACTH	45	36	42	55	25	30	36
Prolactin	6.55	8.98	10.77	6.66	22.6	7.22	6.69
PelvicUSG	P	PP	PP	P			
HypoMRI			N	N	N	N	N
Follow-up	treatment	N	N	nt	nt	nt	nt

P:pubertal;PP:prepubertal
E2:pg/ml,LH:U/L,17OHP:ng/ml,DHEAS:microg/dl,Prolactin:ng/ml,T:treatment,nt:no treatment

