EFFECTS OF NUTRITION AND VITAMIN D DEFICIENCY ON CENTRAL PUBERTY PRECOCIOUS

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Introduction

Puberty is a dynamic period of physical growth. Genetic factors, increasing prevalence of adiposity, environmental factors and the widespread presence of endocrine-disrupting chemicals are suspected to contribute to the trend of earlier pubertal onset.

Method

The study group consists of 32 girls diagnosed with central puberty precocious. The eating habits and physical activity status were evaluated with a detailed questionnaire. Daily calorie and nutrients intake were calculated according to the three-day dietary records. Anthropometric measurements, bioelectrical impedance analysis and biochemical findings were compared with the age matched control group.

Results

All patients admitted with breast enlargement before 8 years and diagnosed by a GnRH test. The birth weight was significantly lower than the control group ($p<0.05$). Duration of breast feeding, beginning of supplementary food, ingestion of vitamin or mineral supplements, usage of feeding bottles and pacifiers were not significantly different between groups. Feeding with formula was more frequent in the study group; however it was not statistically different. Mean calorie and macronutrients intake was not different, as well as physical activity status. The possibility of puberty precocious was found as 3.5 fold increased in patients who consume yogurt less than 2 times a week, 9.7 fold increased in patients who consume salami every day or more than once a week and 3.4 fold increased in patients who consume chicken together with its skin. Serum Vitamin D levels were significantly low in the study group ($p<0.01$).

Table-1. Biochemical Parameters of the Patients with Central Puberty Precoccious

Biochemical Parameters	Reference Ranges	Study Group (n:32) Mean	Study Group (n:32) SD	Control Group (n:30) Mean	Control Group (n:30) SD	p
Glucose (mg/dl)	74-106	90,9	8,72	90,3	12,14	0,803
Total cholesterol (mg/dl)	110-200	164,5	24,40	169,6	27,35	0,439
Triglyceride (mg/dl)	30-200	84,1	37,89	77,9	28,26	0,475
HDL (mg/dl)	35-60	55,6	9,33	57,9	12,09	0,394
LDL (mg/dl)	60-129	91,6	22,03	95,1	22,49	0,542
Alcaline phosphatase (U/L)	40-300	307,4	221,93	236,0	91,43	0,107
Calcium (mg/dl)	8,8-10,8	10,3	0,33	10,3	0,31	0,823
Phosphorus (mg/dl)	3,1-5,5	5,4	0,57	5,0	0,59	0,005*
Iron (mcg/dl)	37-145	73,2	25,45	74,7	25,35	0,822
Iron Binding Capacity (mcg/dl)	112-346	340,2	44,13	327,6	48,53	0,290
Hemoglobin (g/dl)	12,5-17	12,7	1,05	12,5	0,64	0,340
Ferritin (ng/ml)	10-291	27,5	16,42	28,1	16,70	0,894
Folic acid (ng/ml)	5,38-20	14,2	10,92	10,2	3,67	0,065
Vit B12 (pg/ml)	214-911	466,2	149,68	446,9	181,30	0,649
$25OHD_3$ (ng/ml)	25-80	16,8	7,12	24,0	8,21	0,000*

P<0.05

Conclusion

Recent studies have shown that the age of menarche is decreasing across the world and they also draw attention to the environmental factors. Our study showed that the some nutritional factors are important and level of $25OHD_3$ was significantly lower in girls with central puberty precocious, supporting the results of recent studies in the literature.

Table-2. Distribution of milk and meat group consumption

Milk Group	Study Group (n:32) n	Study Group (n:32) %	Control Group (n:30) n	Control Group (n:30) %
Cow's milk (pastourised)				
Once or more in a week	18	56,2	19	63,3
Once or less in two weeks	14	43,8	11	36,7
	χ^2:0.323; p:0.379			
Cow's milk (UHT)				
Once or more in a week	11	34,4	15	50,0
Once or less in two weeks	21	65,6	15	50,0
	χ^2:1,552; p:0,162			
Skimmed cow's milk				
Once or more in a week	3	9,4	3	10,0
Once or less in two weeks	29	90,6	27	90,0
	χ^2:0,007; p:0,633			
Cheese				
Once or more in a week	28	87,5	28	93,3
Once or less in two weeks	4	12,5	2	6,7
	χ^2:0,603; p:0,367			
Yoghurt				
Once or more in a week	10	31,2	9	30,0
Once or less in two weeks	22	68,8	21	70,0
	χ^2:0,011; p:0,567			
Ayran (naturel yoghurt drink)				
Once or more in a week	17	53,1	24	80,0
Once or less in two weeks	15	46,9	6	20,0
	χ^2:4,993; p:0,024 (Odds ratio: 3,5(%95GA 1,13-10,95)			
İce cream				
Once or more in a week	23	71,9	20	66,7
Once or less in two weeks	9	28,1	10	33,3
	χ^2:0,198; p:0,433			

Meat Group	Study Group (n:32) n	Study Group (n:32) %	Control Group (n:30) n	Control Group (n:30) %
Egg				
Once or more in a week	3	9,4	2	6,7
Once or less in two weeks	29	90,6	28	93,3
	χ^2:0,153; p:0,531			
Salami				
Once or more in a week	11	34,4	4	13,3
Once or less in two weeks	21	65,6	26	86,7
	χ^2:3,738; p:0,050 (Odds ratio:3,4(%95GA 1,0-12,25)			
Sausage				
Once or more in a week	10	31,2	3	10,0
Once or less in two weeks	22	68,8	27	90,0
	χ^2:4,219; p:0,039(Odds ratio:4,1(%95GA 1,01-16,71)			
Sucuk (%100 beef and scices)				
Once or more in a week	9	28,1	9	30,0
Once or less in two weeks	23	71,9	21	70,0
	χ^2:0,026; p:0,546			
Legumes				
Once or more in a week	21	65,6	21	70,0
Once or less in two weeks	11	34,4	9	30,0
	χ^2:0,136; p:0,462			
Big Fish				
Once or more in a week	4	12,5	7	23,3
Once or less in two weeks	28	87,5	23	76,7
	χ^2:1,245; p:0,217			
Small Fish				
Once or more in a week	5	15,6	8	26,7
Once or less in two weeks	27	84,4	22	73,3
	χ^2:1,139; p:0,225			

Meat Group	Study Group (n:32) n	Study Group (n:32) %	Control Group (n:30) n	Control Group (n:30) %
Beef				
Once or more in a week	20	62,5	19	63,3
Once or less in two weeks	12	37,5	11	36,7
	χ^2:0,005; p:0,578			
Mutton				
Once or more in a week	1	3,1	1	3,3
Once or less in two weeks	31	96,9	29	96,7
	χ^2:0,002; p:0,738			
Lamb				
Once or more in a week	4	12,5	3	10,0
Once or less in two weeks	28	87,5	27	90,0
	χ^2:0,097; p:0,537			
Chicken breast with skin				
Once or more in a week	3	9,4	3	10,0
Once or less in two weeks	29	90,6	27	90,0
	χ^2:0,007; p:0,633			
Chicken breast without skin				
Once or more in a week	12	37,5	11	36,7
Once or less in two weeks	20	62,5	19	63,3
	χ^2:0,005; p:0,578			
Chichen leg with skin				
Once or more in a week	8	25,0	1	3,3
Once or less in two weeks	24	75,0	29	96,7
	χ^2:5,858; p:0,017 (Odds ratio:9,7(%95GA 1,13-82,83)			
Chichen leg without skin				
Once or more in a week	14	43,8	11	36,7
Once or less in two weeks	18	56,2	19	63,3
	χ^2:0,323; p:0,379			

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