Height and Upper/Lower Body Ratio in Turner Syndrome Adolescents in Indonesia; Are They Related?

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Introduction & Objectives

Short stature is one of the most common findings in Turner syndrome. There are two types of Turner syndrome based on karyotype: classical and mosaic. It is often marked by the body disproportion and dysmorphic profile of the patients. There are still not many data available regarding upper lower body segment ratio (U/L body segment ratio) in Turner syndrome patient in Indonesia. This study aims to show the profile of height and U/L body segment ratio and whether there is any significant difference based on their karyotype in Turner syndrome patients in Indonesia.

Methods

Samples were taken from Endocrine Out-Patient Clinic at Cipto Mangunkusumo National Hospital. Weights, heights, and sitting heights were measured. The heights were plotted into CDC growth curve and Turner syndrome growth curve. The upper-lower body segment ratio was measured and plotted into the U/L body segment ratio curve. The significance of the difference in the height and the U/L body segment ratio between classical and mosaic karyotype were measured using independent T test.

Results & Conclusion

Out of 21 samples, 8 were having classical karyotype and 13 were having mosaic karyotype. Seven of these received growth hormone (GH) and 14 did not. Six of the subjects who received GH were having short stature. Almost all of the subjects were having short stature (85.7%) based on CDC growth curve (<3 percentile CDC curve), except for 2 subjects with mosaic karyotype (both subjects were at 7 percentile CDC curve) and 1 subject with classical karyotype (at 4 percentile CDC curve) with normal height (14.3%). Two of these subjects did not receive growth hormone (GH). The upper-lower body ratio in all samples was increased. There was no significant difference of the U/L body segment ratio ($p>0.05$) and height ($p>0.05$) between classical and mosaic karyotype.

Short stature was found in 85.7% of the subjects. The upper/lower body ratio in adolescents with Turner syndrome in Indonesia was found to be increased. Body height and U/L body segment ratio were not significantly different between classical and mosaic karyotype. In this study, apparently, subjects who obtained GH therapy were still unable to attain a normal height and a normal U/L body segment ratio.

Table 1 Patients' Characteristics

Characteristics	Karyotype	
	Classical (n=8) (mean ± SD)	Mosaic (n=13) (mean ± SD)
Age	15.88±2.53	18.15±3.11
Age of diagnosis	11.25±5.18	12.31±4.19
Weight	44.81±8.79	45.33±9.86
Height	139.63±8.22	141.77±7.11
BMI	23.04±4.19	22.34±3.53
Sitting height	75.31±3.31	75.77±5.21
U/L body segment r	1.18±0.057	1.15±0.07

Table 2 Height and U/L Body Ratio

		Classical (n=8)	Mosaic (n=13)	P value
Height	<3rd percentile	7	11	0.53*
	Normal	1	2	
U/L body ratio	Increased	8	12	
	Normal	0	1	0.37*
	Decreased	0	0	

*Analyzed with Independent T-test

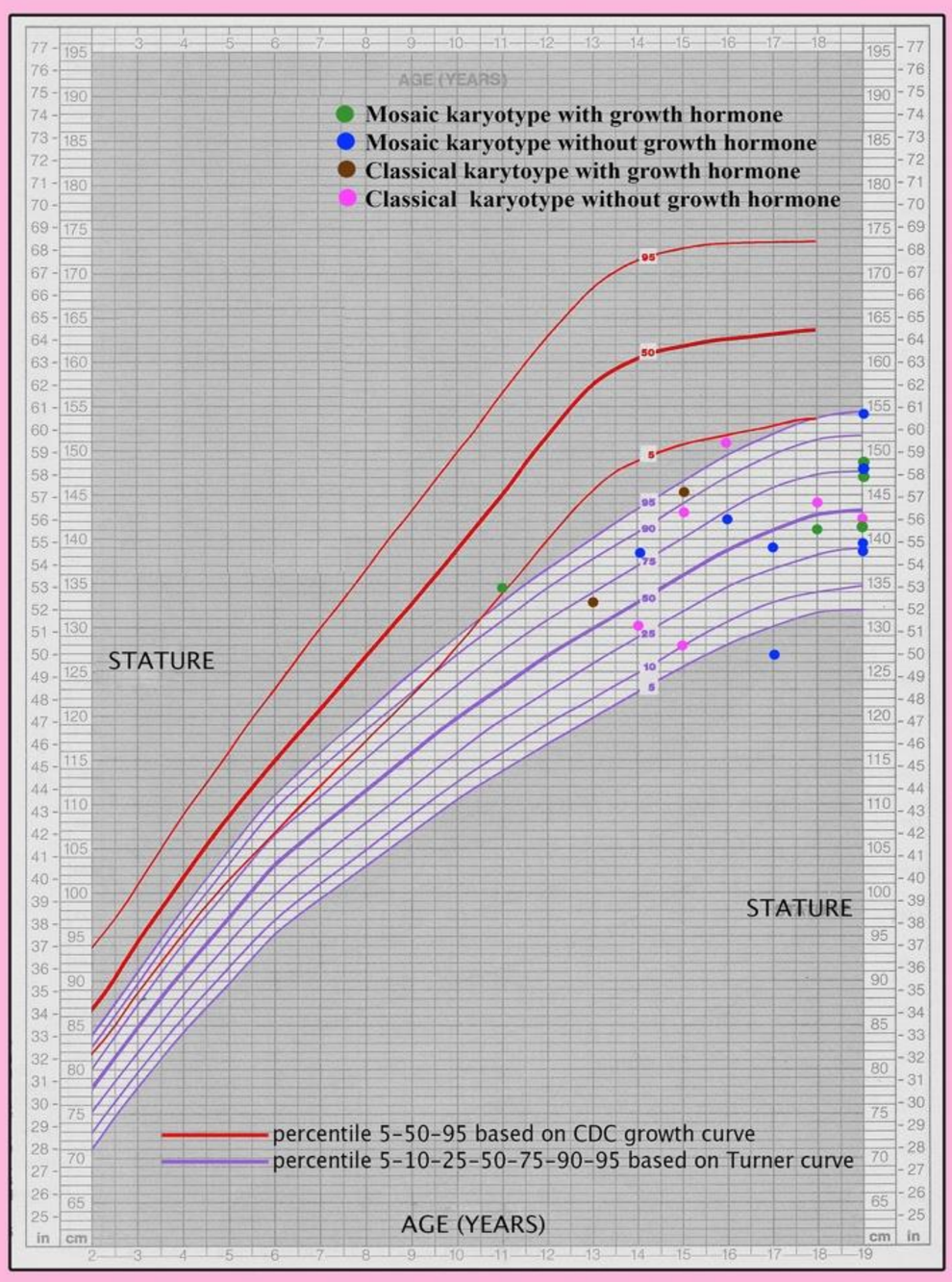

Figure 2 Data of Height Distribution of the Subjects in Turner Growth Curve (Modified from Growth and Height Management. Turner Syndrome Society of the United States. [Cited 2019 January 1]. Available from: https://www.turnersyndrome.org/growth-and-height

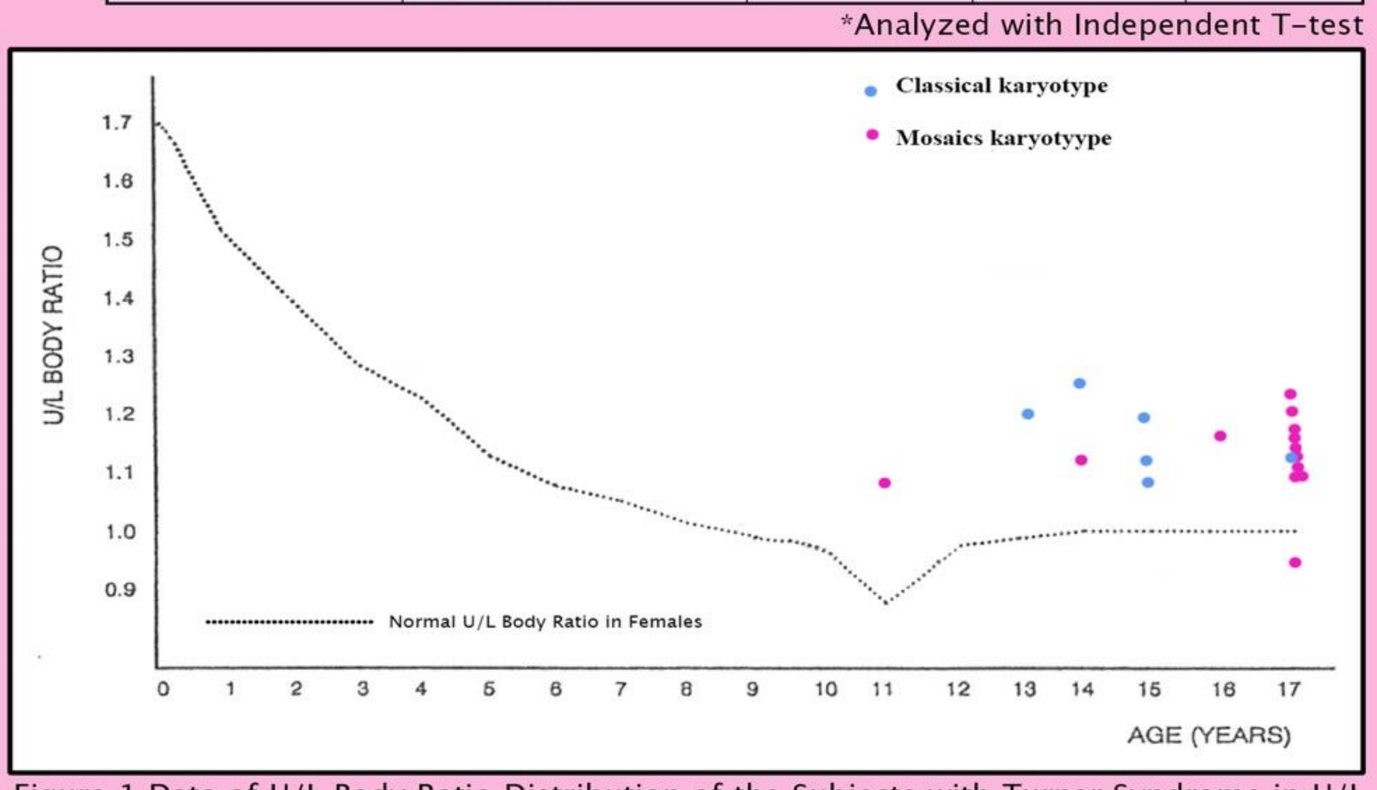

Figure 1 Data of U/L Body Ratio Distribution of the Subjects with Turner Syndrome in U/L Body Segment Ratio Curve (Females) (Modified from Lifshitz F. Textbook of Pediatric Endocrinology. 2nd ed. New York, NY: Marcel Dekker, Inc; 1990.)

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