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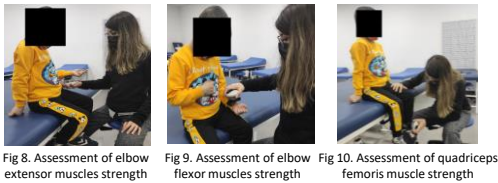
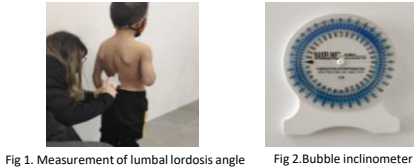
Aim

The aim of this study is to examine the types of lower urinary tract symptoms (LUTS) in children with Duchenne Muscular Dystrophy (DMD) and the correlation of LUTS with functional level, posture, muscle strength, pelvic floor muscle control (PFMC), activities of daily living (ADL) and quality of life (QOL). The study was approved by Hacettepe University Non-Interventional Clinical Research Ethics Committee (September, 21, 2021 ; GO 21/982)



Material and Method

Forty-five children with DMD between the ages of 5-18 (Age: 9.00 ± 3.32 years) were included in the study. LUTS was assessed with Dysfunctional Voiding and Incontinence Scoring System¹, functional level with Brooke Upper Extremity Functional Classification and Vignos Scale, posture with New York Posture Assessment Questionnaire, Baseline Bubble Inclinator (10602, Fabrication Enterprises Inc, USA) (Figure 2) and Baseline Digital Inclinator (12-1057, Fabrication Enterprises Inc, USA) (Figure 4), PFMC with Urine Stop Test, ADL with Barthel Index and QOL with Pediatric QOL Inventory 3.0 Neuromuscular Module (PEDSQL NMM). In addition, using the Hoggan microFET2 device (Hoggan Scientific, USA), individuals' muscle strength of the hip flexors, quadriceps femoris, shoulder flexors, elbow extensors, elbow flexors, trunk extensors and trunk flexors were evaluated (Figure 5-10)². The associated factors were compared between the group with and without lower urinary system dysfunction (LUTD).



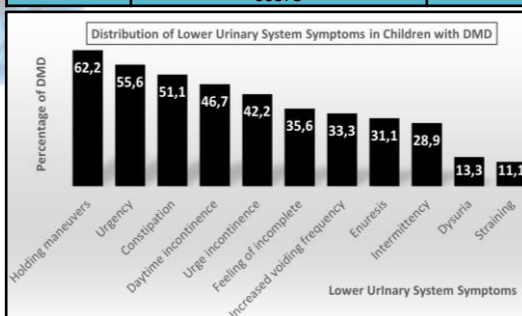
Results

At least one of LUTS was found in 86.7% of the children with DMD, and LUTD was found in 44.44%. It was found that the severity of LUTD increased as the muscle strength of bilateral hip flexors, quadriceps femoris muscles, elbow flexors, and extensors decreased ($p < 0.05$). In addition, as the severity of LUTD increased, independence in ADL and QOL decreased ($p < 0.05$). Comparison of related factors with and without LUTD is given in Table 1. In addition, it was shown that 80% of the children had never been to a urologist before.

Conclusion

Consequently, it has been observed that although LUTS is frequently seen in children with DMD, it is a neglected condition, however the symptoms negatively affect the QOL and ADL. As a result, the importance of evaluating the parameters that are important for physiotherapists, and have been shown to be associated with LUTS, was emphasized.

Table 1. Comparison of related factors with and without LUTD			LUTD+ n (%)	LUTD- n (%)	χ^2	p
			20 (44.4)	25 (55.6)		
Functional Level	Vignos Scale	Early Stage	14 (70.0)	22 (88.0)	2.756	0.252
		Middle Stage	1 (5.0)	0 (0.0)		
		Late Stage	5 (25.0)	3 (12.0)		
	Brooke Upper Extremity Functional Classification	Phase 1	10 (50.0)	22 (88.0)	15.131	0.004*
		Phase 2	8 (40.0)	0 (0)		
		Phase 3	1 (5.0)	0 (0)		
		Phase 4	1 (5.0)	2 (8.0)		
Phase 5		0 (0)	1 (4.0)			
Phase 6		0 (0)	0 (0)			
Variables			LUTD+ Mean±SD	LUTD- Mean±SD	Z	p
Posture	Total NYPAQ score		47.00±7.62	51.40±7.37	-2.044	0.041*
	Lumbar lordosis (°)		33.15±15.68	32.04±14.35	-0.526	0.599
	Inclination angle (°)		9.05±13.91	9.68±9.25	-0.552	0.581
PFMC	He can stop midstream urine flow		12 (60.0)	24 (96.0)	9.225	0.010*
	He can't stop midstream urine flow but he can slow it down		5 (25.0)	1 (4.0)		
	He can't affect midstream urine flow		3 (15.0)	0 (0)		
ADL	Total Barthel Index score		71.75±20.60	86.20±22.51	-3.346	0.001*
QOL	Total parent PEDSQL NMM score		67.75±14.47	74.24±13.71	-1.623	0.105
	Total child PEDSQL NMM score		75.03±10.71	81.74±11.24	-2.507	0.012*



Explanation of Table 1.
LUTD: Lower Urinary System Dysfunction, **NYPAQ:** New York Posture Assessment Questionnaire, **PFMC:** Pelvic Floor Muscle Control, **ADL:** Activities of Daily Living, **QOL:** Quality of Life, **PEDSQL NMM:** Pediatric QOL Inventory 3.0 Neuromuscular Module, * $p < 0.05$

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