Can Spot Urine CA19-9 be a potential biomarker in children with lower urinary tract dysfunction?

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Background

To evaluate CA 19-9 as a potential biomarker for the first time in children with lower urinary tract conditions, a hypothesis not previously explored.

Table 1. Comparison of urinary Ca19-9 levels between groups

	Neurogenic group (n:25)	Non-Neurogenic group (n:27)	Control group (n:148)	P value
CA 19-9 median (min-max) U / ml	77,34 (41,73-107,84)	58,63 (42,44-101,87)	49,78 (26,09-90,83)	<0,001

Table 2. Evaluation of UUT and Urodynamic Parameters of the Neurogenic Group

			P value
Radiologic UUT Damage	**Present (n:13)**	**Absent (n:12)**	
CA 19-9 median (min-max) U / ml	70.05 (44.21-102.15)	80,74 (41.73-107.84)	0.27
DLPP	**≤ 20 cm H_2O (n:15)**	**>20 cm H_2O (n:10)**	
CA 19-9 median (min-max) U / ml	77.34 (41.73-102.15)	77.72 (57.3-107.84)	0.824
Compliance	**≤ 10 ml/ cm H_2O (n:21)**	**> 10 ml/ cm H_2O (n:4)**	
CA 19-9 median (min-max) U / ml	77.34 (41.73-107.84)	91.79 (70.08-98.98)	0.159

UUT: Upper urinary tract, DLPP: Detrusor leakage point pressure

Methods

Study Groups:
25 children with non-neurogenic LUTS
27 with neurogenic LUTS
148 healthy controls

Sample Collection & Processing:
Measured from spot urine using ELISA

Analysis:
CA19-9 levels were compared with urodynamic findings and subgroups based on UUT damage.
Correlation analyses were performed between LUT parameters and CA19-9

Results

Total: 200 children, 138 (69%) male, 62 (31%) female

Mean age: 9.18 years

Median urinary CA19-9 (U/ml):

Neurogenic group: 77.34 (41.73–107.84)

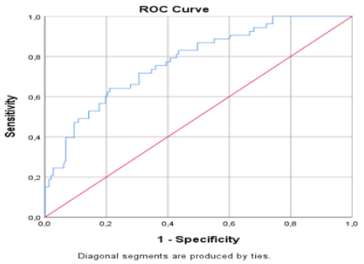
Non-neurogenic group: 58.63 (42.44–101.87)

Controls: 49.87 (26.09–90.83) → ***p<0.001***

Neurogenic subgroup: No significant differences by: UUT damage (*p=0.27*) ,DLPP >20 cm H_2O (*p=0.824*), Compliance <10 ml/cm H_2O (*p=0.159*)

Correlation: Significant association only between CA19-9 and PVR

Figure 3. LUTS group and Control group ROC analysis



Risk Factor	AUC (CI %)	Threshold Value	P	Sensitivity (%)	Specificity (%)
Lower Urinary Tract Symptoms (LUTS)	0,777 (0,705-0,848)	57,46	<0,001	69,8	69,4

Implications

This study suggests spot urine CA 19-9 as a potential biomarker for diagnosing neurogenic and non-neurogenic LUTS in children. However, its correlation with subgroups and diagnostic parameters was not established, highlighting the need for larger studies.