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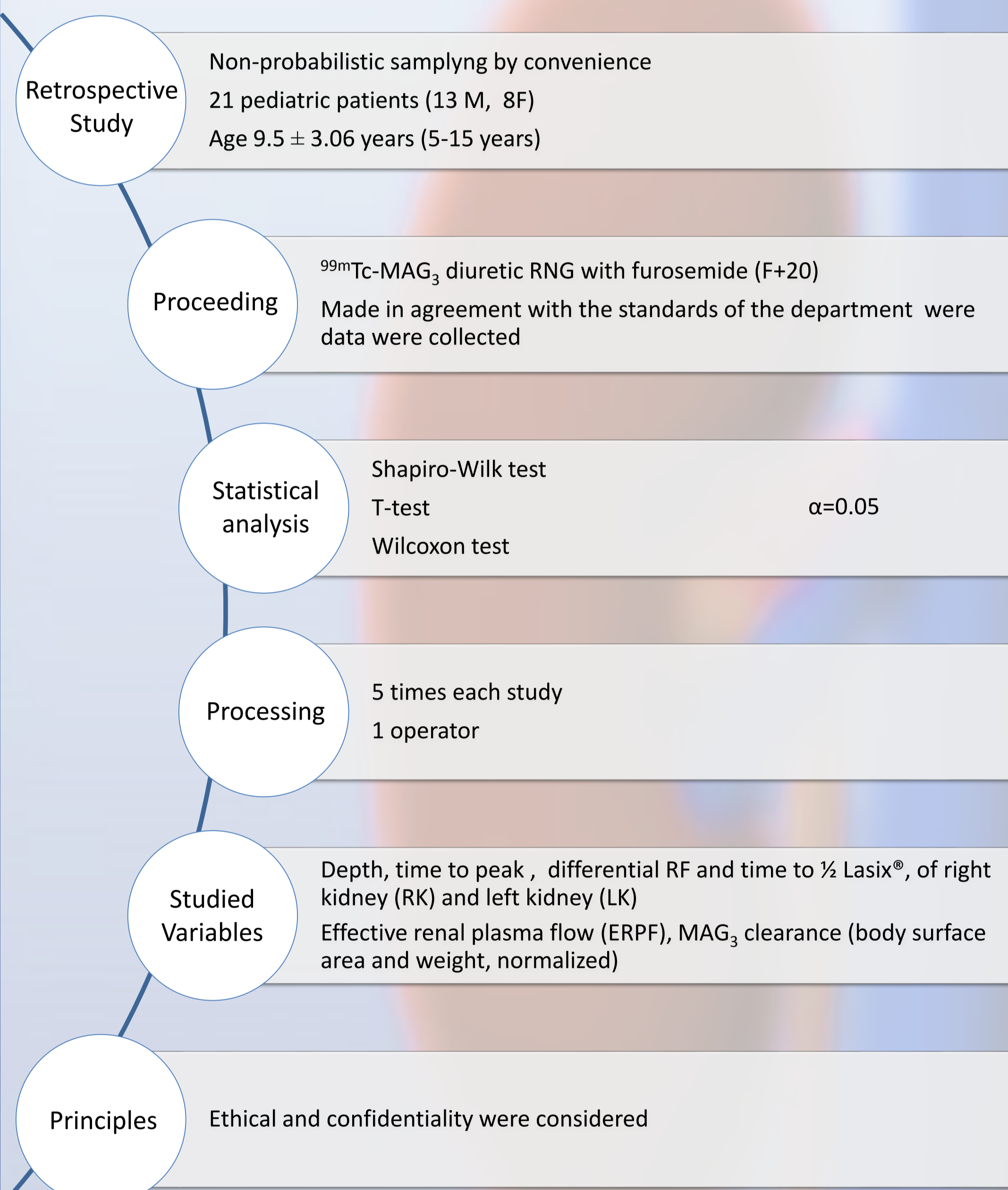
Introduction

The renogram (RNG) enables the evaluation of morphology and function of the urinary system¹⁻⁷. ^{99m}Tc-MAG₃ is the most widely used radiopharmaceutical for studies in pediatric settings^{2-5,7-9}. For calculation of the parameters of renal function (RF) some processing algorithms are used. Was studied the MAG3 Without Samples (MWS) and QuantEM Expert (QEE), the most applied in Portugal in nuclear medicine.

Aim

Evaluate the correlation of RF in RNG, with the processing algorithms MWS and QEE.

Methods



Results

Table 1 – Analised parameters with algorithms MWS and QEE-p (Wilcoxon test)

Pair	Parameters Studied	Ranks	n	Mean of Ranks	p
1	Time to peak max. LK MWS (min) Time to peak max. LK QEE-p (min)	Positive	16	11.56	0.016*
		Negative	5	9.20	
		Total	21		

Table 2 – Analised parameters with algorithms MWS and QEE-p (T-test)

Pair	Parameters Studied	r	Mean	n	Standard deviation	t	Df	p
1	RK depth MWS (cm)	0.993	3.790	21	0.653	-24.411	20	0.000*
	RK depth QEE-p (cm)		4.682		0.797			
2	LK depth MWS (cm)	0.999	3.753	21	0.639	-26.361	20	0.000*
	LK depth QEE-p (cm)		4.682		0.797			
3	MAG ₃ clearance total MWS (mL/min)	0.610	178.800	21	38.705	-14.095	20	0.000*
	MAG ₃ clearance total QEE-p (mL/min)		322.079		58.690			
4	MAG ₃ clearance RK MWS (mL/min)	0.833	143.959	21	32.985	-4.640	20	0.000*
	MAG ₃ clearance RK QEE-p (mL/min)		163.368		33.360			
5	MAG ₃ clearance LK MWS (mL/min)	0.808	143.820	21	39.384	-2.941	20	0.008*
	MAG ₃ clearance LK QEE-p (mL/min)		158.737		32.880			
6	Normalized MAG ₃ clearance MWS (mL/min)	0.843	287.793	21	65.867	-4.421	20	0.000*
	MAG ₃ clearance total QEE-p (mL/min)		322.079		58.690			
7	MAG ₃ clearance total MWS (mL/min)	0.017	178.800	21	38.705	-5.616	20	0.000*
	Normalized MAG ₃ clearance QEE-p (mL/min)		314.624		104.502			
8	ERPF MWS (mL/min)	0.843	429.534	21	98.323	-9.640	20	0.000*
	ERPF QEE-p (mL/min)		545.946		99.422			

Table 3 – Analised parameters with algorithms MWS and QEE-a (Wilcoxon test)

Pair	Parameters Studied	Ranks	n	Mean of Ranks	p
1	Differential RF RK MWS (%) Differential RF RK QEE-a (%)	Positive	17	10.94	0.014*
		Negative	4	11.25	
		Total	21		
2	Differential RFLK WS (%) Differential RF LK QEE-a (%)	Positive	4	11.25	0.014*
		Negative	17	10.94	
		Total	21		
3	Time to peak max. LK MWS (min) Time to peak max. LK QEE-a (min)	Positive	17	12.09	0.002*
		Negative	4	6.38	
		Total	21		
4	Time to ½ Lasix® LK MWS (min) Time to ½ Lasix® LK QEE-a (min)	Positive	13	9.73	0.042*
		Negative	7	11.93	
		Total	20		

Table 4 – Analised parameters with algorithms MWS and QEE-a (T-test)

Pair	Parameters Studied	r	Mean	n	Standard deviation	t	Df	p
1	RK depth MWS (cm)	0.995	3.790	21	0.653	-8.023	20	0.000*
	RK depth QEE-a (cm)		3.972		0.733			
2	LK depth MWS (cm)	1.000	3.753	21	0.639	8.846	20	0.000*
	LK depth QEE-a (cm)		3.477		0.783			
3	MAG ₃ clearance total MWS (mL/min)	0.599	178.800	21	38.705	-11.340	20	0.000*
	MAG ₃ clearance total QEE-a (mL/min)		283.651		52.055			
4	MAG ₃ clearance total MWS (mL/min)	0.026	178.800	21	38.705	-4.584	20	0.000*
	Normalized MAG ₃ clearance QEE-a (mL/min)		277.908		92.191			
5	ERPF MWS (mL/min)	0.853	429.534	21	98.323	-4.551	20	0.000*
	ERPF QEE-a (mL/min)		480.735		88.206			

* P ≤ 0.05 → show statistically significant differences

Conclusion

MWS and QEE provide the same outputs but with variation on standardization parameters. It's important that the operator understand the algorithm used in order to obtain standardization of results.

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