PON1 polymorphisms and Wilms Tumor

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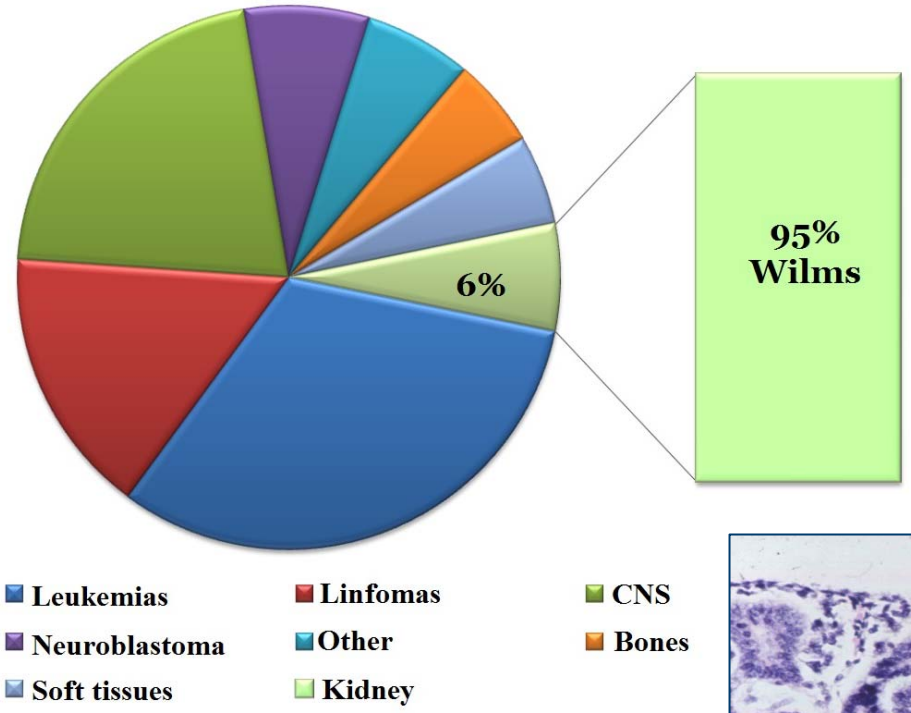
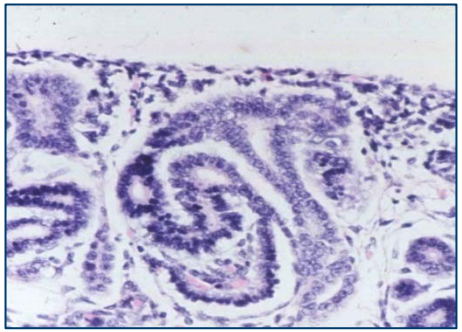
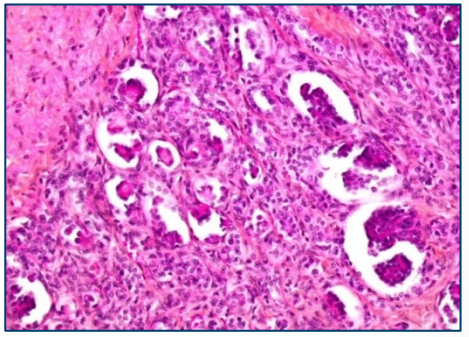
Wilms tumor

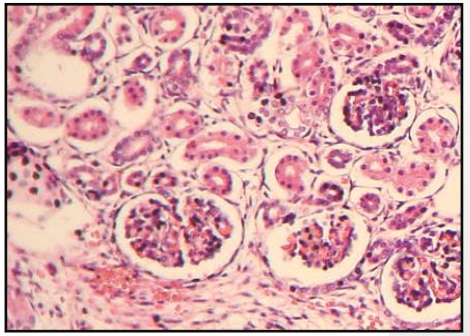




Fetal kidney
18 weeks

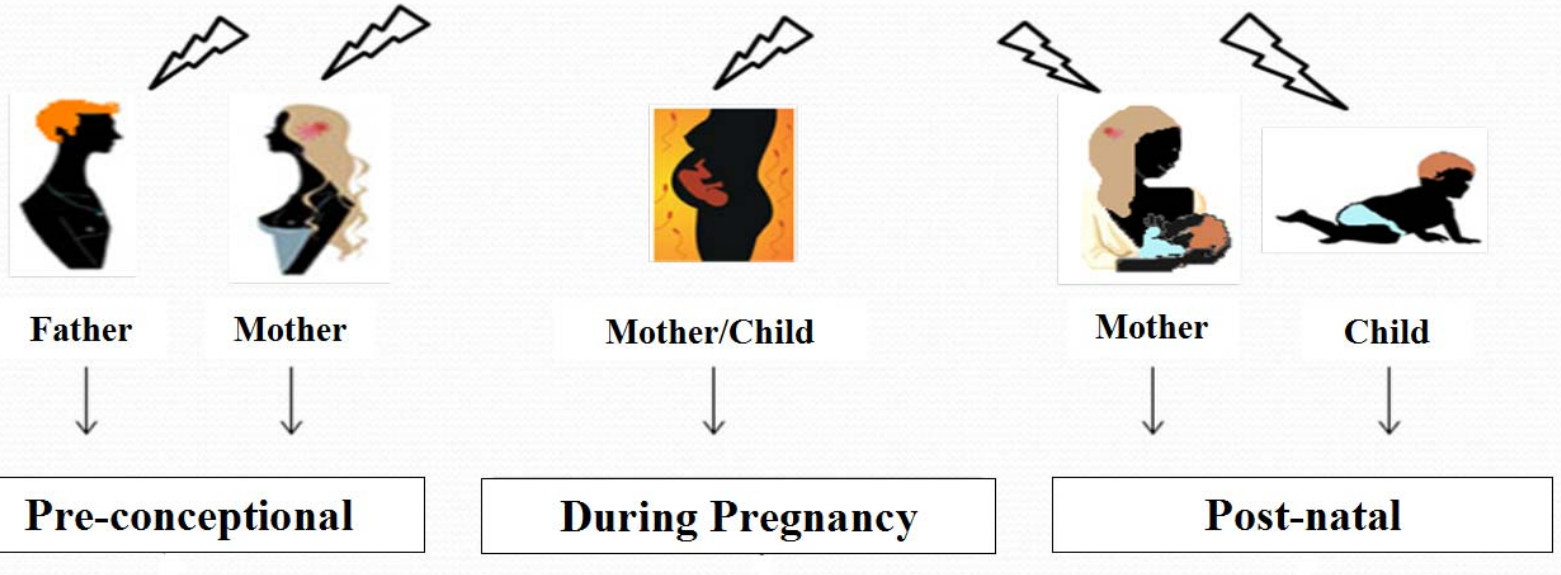


Wilms tumor



Mature kidney

EXPOSITION TO ENVIRONMENTAL RISK FACTORS



Pesticides and Wilms Tumor

- Previous studies have shown an association of pesticides exposures and Wilms Tumor risk.

British Journal of Cancer (1998) **77**(5), 825–829

Childhood cancer and paternal employment in agriculture: the role of pesticides

NT Fear[1], E Roman[2], G Reeves[1] and B Pannett[3]

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Int. J. Hyg. Environ.-Health 209 (2006) 57–64

International Journal of Hygiene and Environmental Health

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Wilms' tumor and exposures to residential and occupational hazardous chemicals

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Research | Children's Health

Household Pesticides and the Risk of Wilms Tumor

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Pesticides and Wilms Tumor

American Journal of Epidemiology

Vol. 141, 1
Printed in U.S.A.

Parental Exposures to Pesticides and Risk of Wilms' Tumor in Brazil

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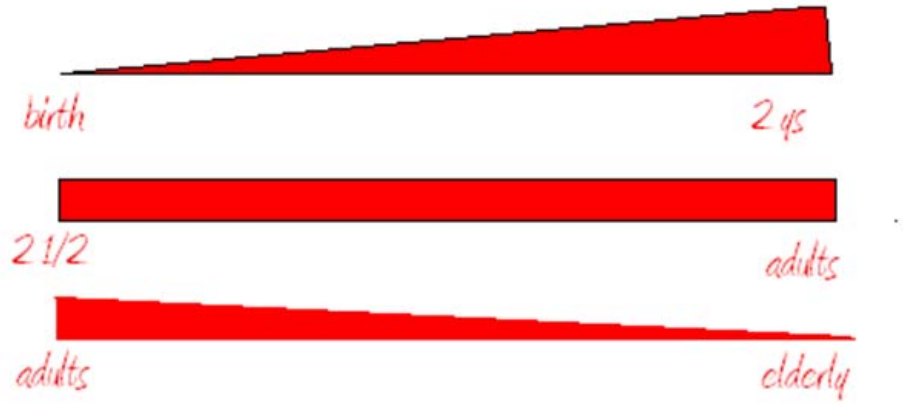
Paraoxonase 1 (PON1)

- Hydrolyses active metabolites of organophosphorus pesticides.
- Levels of PON1 change according to age.

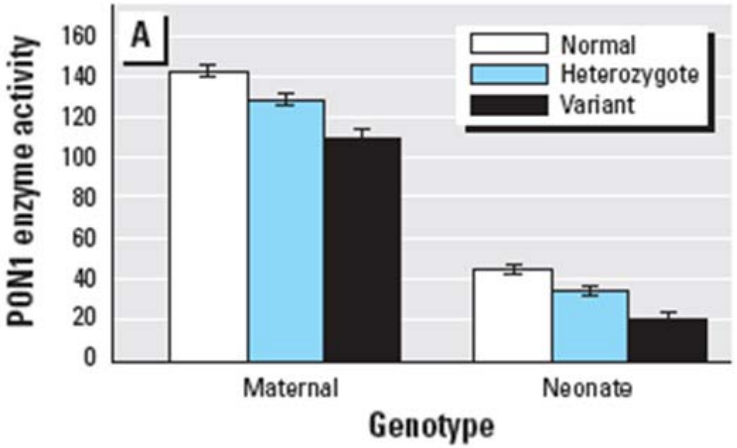


- And also due to polymorphims.

Polymorphisms in the gene *PON1*

PON1 Q192R – change activity

PONL55M – change enzyme levels



Children susceptibility to Wilms Tumor can be modified by PON1 genotypes:

their own genotype

and during pregnancy, in case of exposition, maternal genotype

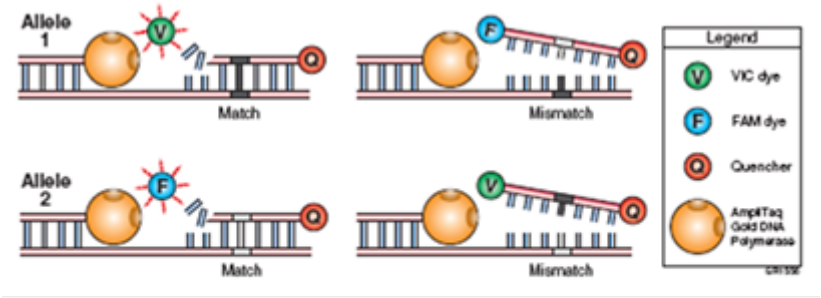
Aims

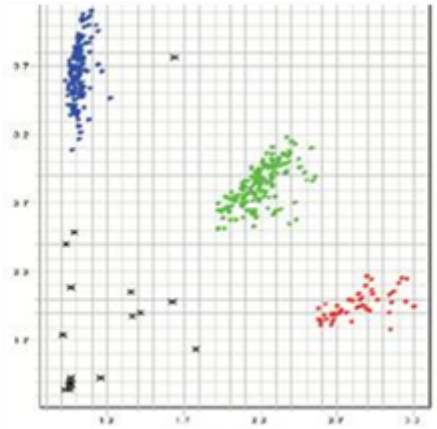
- Identify the distribution of *PON1* (Q192R and L55M) polymorphisms and its relationship with Wilms tumor & embryonal neuroectodermal origin tumors development in Brazilian children.

- Identify the frequencies of *PON1* polymorphisms in mothers and the occurrence of embryonic tumors in their children.

Subjects and Methods

- Allelic discrimination (TaqMAN probes)





- 47 Brazilian children with WT and their mothers;
- 49 other embryonal tumors (retinoblastoma, neuroblastoma and medulloblastoma) and their mothers;
- 190 health children and 117 mothers

Subjects and Methods

- Wilms Tumor patients: age ranged from 0 – 125 months.
- Other embryonal tumors: age range from 0 – 132 months.
- Children used as controls: age range from 0 – 60 months.
- There was no statistical difference according to gender in tumors nor even in controls.

Results

Table II: Genotype distributions and polymorphisms susceptibility

		Wilms Tumor		Neuroectodermal Tumors	
	Genotype	Child OR (95%CI)	Mothers OR (95%CI)	Child OR (95%CI)	Mothers OR (95%CI)
PON1 Q192R	QQ	1.0	1.0	1.0	1.0
	QR	**2.25 (0.98 - 5.14)**	1.58 (0.68 - 3.66)	1.61 (0.78 - 3.30)	1.04 (0.49 - 2.19)
	RR	1.83 (0.71 - 4.7)	1.64 (0.56 - 4.81)	1.47 (0.64 - 3.34)	2 (0.81 - 4.92)
PON1 L55M	LL	1.0	1.0	1.0	1.0
	LM	1.72 (0.87 - 3.41)	1.45 (0.68 - 3.12)	0.91 (0.48 - 1.74)	0.69 (0.35 - 1.37)
	MM	1.12 (0.34 - 3.62)	2.28 (0.58 - 8.86)	0.33 (0.07 - 1.49)	0.43 (0.08 - 2.36)

- Mothers genotypes and children genotypes together:
- *PON1* Q192R – QQ/QQ; QQ/QR; QR/QQ; QR/QR; RR/QR; RR/RR
- *PON* L55M – LL/LL; LL/LM; LM/LL; LM/MM; MM/LM; MM/MM

- We observed no significant differences but N is too small.

Final Remark

- Despite the small series of cases , our preliminary results suggest that ***PON1*** **Q192R** polymorphism may be an important risk factor in the development of WT when children are exposed to pesticides.

Acknowledgements

- Ministério da Saúde
- Support Agencies
- Pediatric Hematology-Oncology Program
- Brazilian Embryonic tumor group
- Dra. Maria do Socorro Pombo-de-Oliveira & Dra. Beatriz de Camargo
- Rafaela Montalvão & Bruno A. Gonçalves

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THANK YOU!