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2nd Annual Michigan Cerebral Palsy Collaborative Research Symposium

October 19, 2010

OWL: MSU-lead Collaborative Study of Cerebral Palsy Etiology

OWL: Origins, Wellness and Life History in Cerebral Palsy

- NIH Project Title: New Paradigms of Cerebral Palsy Etiology
- Institutional Participants:
 - Michigan State University
 - University of Michigan
 - Mary Free Bed Rehabilitation Hospital
 - Spectrum Health/Helen Devos Children's Hospital
 - Van Andel Research Institute
 - University of Minnesota

Why?

- Prevention!
- Explain unexplained cases
- Elucidate why one child with the same risk factor will develop CP and another won't



Areas of Inquiry

Inflammation/Infection

- mRNA for pro-inflammatory cytokine
inflammatory gene signatures
- Viral DNA
- Mycoplasmal DNA

Correlate with history of maternal infection

Areas of Inquiry

Hormonal

- mRNA for thyroid hormonal gene signatures
- Newborn thyroid hormone screening results

Correlate with history of maternal thyroid disease

Areas of Inquiry

Thrombotic

- mRNA for thrombophilic gene signatures

Correlate with:

- family history of stroke
- History of maternal fetal loss
- Indicators of asphyxia

Data & Specimen Collection

- Detailed Maternal survey
 - Prenatal
 - Birth
 - Child's course
- Physician information
- Access to previous collected newborn blood spot
- Saliva collection (for future analysis)

Study population

- 200 Michigan-born children with cerebral palsy and sibling controls
- 200 matched controls
- additional sample of 20 twin pairs discordant for CP



Pitfalls and Pleasures

Pleasures:

- Intellectual stimulation
 - Discussion with different practitioners, different disciplines
 - e.g. What are the limits of the diagnosis of CP?
 - Exposure to different realms of research
- Satisfaction
 - Clinical benefits

Pitfalls and Pleasures

Pitfalls, Perils and Pains:

- Institutional Review Boards
 - Differing perspectives, requirements and priorities
 - Variable timeframes
- Recruitment
- Physician investment
 - Involvement in recruitment and promotion (cases & controls)
- Parent investment (controls)

Developments

- Changes in access to blood spots
 - Michigan Neonatal Biobank
- Public opinion re: research using newborn blood spots



Future

- Follow-up on leads obtained in OWL
 - Hypothesis testing
- DNA analysis obtained from saliva samples
- ???

Conclusion

Thanks to:

- MSU CP/OWL research team led by Nigel Paneth:
 - Ariel Brovont
 - Julia Busik
 - Rachel Fisher
 - Wenjiang Fu
 - Mary Jo Cooley Hidecker
(*now at U Central Ark*)
 - Nhan Ho
 - Madeleine Lenski
 - Bridget Messaros

- Suzette Vanderbeek
- Sainan Wei
- Julie Wirth
- HDVCH/ MFB colleagues
- U of Michigan team led by Ed Hurvitz
- Van Andel Institute team led by James Resau
- U of Minnesota team led by Mark Schleiss
- Participating practices
- Children and their families