

Report on the Workshop on Gaucher disease and Parkinsonism, April 8-9, 2010.

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The workshop on Gaucher disease and Parkinsonism was a great success- participants repeatedly commented on how this was a rare opportunity to share and exchange information across disciplines toward a common goal! We had participants from 5 continents, over twelve countries and fields including brain imaging, movement disorders, Gaucher disease, population genetics, genomics, cell biology, animal models, neuropsychology, neuropathology and community medicine.

As a result of the meeting, prospective projects that would benefit from collaborative efforts were identified by the participants. These six topics were identified in the discussion sessions.

1. Establishment of an international collaboration regarding the frequency of *GBA* mutations in LBD.

Initial reports suggest that the frequency of *GBA* mutations in LBD may be even higher than in Parkinson disease, but the individual studies have not been large enough to establish a true Odds Ratio. It was proposed that we identify groups that may be interested in establishing a collaboration similar to that assembled for the PD study published in the NEJM in October. Groups with cohorts of patients (especially autopsy samples) where *GBA* sequencing has been performed that are interested can contact me. If we can assemble a combined sample of over 1000 sequenced samples, we can organize a framework similar to that used for the PD study. This could be announced in the NIH meeting on Biomarkers for LBD scheduled for late April.

2. Prospective study of parkinsonian manifestation in patients with Gaucher disease and their relatives (parents and/or siblings).

Several centers are now phenotyping cohorts with Gaucher disease, specifically looking for early signs of parkinsonism. It was proposed that we establish a working group to define uniform diagnostic assessment that can be performed at multiple centers. This could include intake questionnaires regarding environmental exposures or autonomic and sleep symptoms, uniform Parkinson scales, cognitive tests, olfactory testing, motor assessments as well as imaging studies. I propose a conference call between interested centers sometime in early May. This could be followed up at the European Working Group on Gaucher Disease meetings in late June, The Movement Disorders meeting in early June or ASHG in October.

3. Coordination of biospecimen repository for subjects with Gaucher disease and parkinsonism.

Several participants raised the importance of collecting biospecimen from these patients. Among the topics discussed were the need to raise awareness of the importance of brain donations, the collection of skin fibroblast samples and the banking of DNA and serum for future studies. We could approach already established Brain banks, the NIH Office of Rare Diseases and Corriel to inquire as to their willingness to help achieve this goal.

4. Collaboration regarding the sharing of sequenced DNA samples from subjects with PD and GBA mutations.

While it is now clear that *GBA* mutations are a risk factor for the development of PD, clearly other genetic changes are involved. However in order to use genomic strategies to identify genetic modifiers or mutations on the trans allele, large numbers of samples are needed, This is only possible if *GBA* positive samples from multiple centers are pooled. Such studies could either be performed sharing the DNA samples, or having each center test large panels of markers.

5. Mouse models

It would be worthwhile to compare the alpha synuclein expression in different Gaucher mouse models. If alpha synuclein accumulation is a consistent finding across different models, this is an important finding for the PD community and should be of interest to the Michael J Fox Foundation.

6. Genetic counseling

It was proposed that participants collaborate to generate a policy statement regarding the association of Gaucher disease and parkinsonism to aid in genetic counseling.

Many thanks for enabling the conference to take place!

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