Introduction

Niemann-Pick Diseases (NPD) are heterogeneous lysosomal storage disorders with low prevalence and poor understanding.

- Acid sphingomyelainase-deficiency disease (ASMD) and Niemann-Pick Type C (NPC) arise from mutations in the SMPD1 gene and NPC1 or NPC2 genes respectively.
- Incidences are estimated to be 0.5 per 100,000 births for ASMD and estimated ~1: 100,000 births for NPC (1).
- The International Niemann-Pick Disease Registry (INPDR), a not-for-profit organisation, has been running a well-established an Electronic Data Capture platform since 2014 for the systematic and uniform collection of NPD clinical data.

Aim

To investigate the clinical characteristics of ASMD and NPC patients enrolled into the INPDR

Results

Patient Demographics

- At the time of analysis, the median (range) age was 4.9 (N=1) for NPA, 26.9 (6.0-87.0) for NPB and 23.2 (2.2-74.3) for NPC.
- The median (range) age at diagnosis was 1.1 (0.3-2.9) years for NPA, 8.8 (0.8-62.7) years for NPB and 5.0 (0.0-68.1) years for NPC.
- No statistically significant sex differences in age at diagnosis and death were detected in NPC patients.
- SMPD1 mutations were confirmed in 20 ASMD patients.
- 97% of NPC patients were reported as having the NPC1 subtype
- Baseline characteristics are summarized in Table 2

Baseline characteristics of patients enrolled into the INPDR

<table>
<thead>
<tr>
<th></th>
<th>NPA (N=17)</th>
<th>NPB (N=41)</th>
<th>NPC (N=193)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at analysis, Median (Range)</td>
<td>4.9 (N=1)</td>
<td>29.6 (6.0-87.0)</td>
<td>23.2 (2.2-74.3)</td>
</tr>
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<td>Age at diagnosis, Median (Range)</td>
<td>1.1 (0.3-2.9)</td>
<td>8.8 (0.8-62.7)</td>
<td>5.0 (0.0-68.1)</td>
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<tr>
<td>Age at death, Median (Range)</td>
<td>2.8 (0.5-4.8) (N=6)</td>
<td>11.7 (4.4-47.6) (N=3)</td>
<td>9.3 (1.0-42.4) (N=62)</td>
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Table 2 – baseline characteristics of patients enrolled into the INPDR

Limitations

- Retrospective and incomplete data and small sample sizes may have impacted statistics
- Patient data was from 6 countries, impacting the generalizability of results

Discussion

- Both ASMD and NPC present with a wide ranging heterogeneous clinical phenotype and age at diagnosis
- A disparity exists between NPB diagnosis age and symptoms first observed
- Whilst no statistical significance was detected, there appears to be a trend towards NPC females being diagnosed early and living longer than NPC males

Conclusion

- The analysis of NPD data from six countries has shown a heterogeneous phenotype in both ASMD and NPC.
- This work demonstrates the value of rare disease registries and the importance of patient-led registries in understanding the natural history of NPDs.

Acknowledgements

We thank everyone involved in the INPDR, including all investigators. We also thank the NPD community for helping drive this registry forward and to the patients, without which this work would not be possible.

References