Taking a sneak peek:

Preterm birth and long-term vision

On June 12, 2021, Dýrleif Pétursdóttir defended her thesis "Ophthalmological follow-up in young adults born premature and screened for retinopathy of prematurity" at the Department of Neuroscience/Ophthalmology, Uppsala University/Akademiska Hospital, Uppsala. Her main supervisor was Assoc. Professor Eva Larsson, with co-supervisor Professor Gerd Holmström.

Dýrleif Pétursdóttir
Department of Surgical Sciences, Uppsala University, Sweden
Department of Ophthalmology, Landspítali University Hospital and Sjónlag, Eye Center, Iceland

Key points:

- Being born preterm has long-term negative effects on visual function.
- Reassuringly, no deterioration occured from age 10 to young adulthood.

Prematurely born children have a higher risk of ophthalmological and neurodevelopmental disorders than those born at term. There is a paucity of long-term, prospective follow-up studies on the visual function of prematurely born adults. The current study reported the outcome of young adults born after the introduction of treatment for retinopathy of prematurity (ROP). The study aimed to assess visual function, visual-motor integration, refraction and its development, as well as strabismus, stereoacuity, accommodation, and convergence in prematurely born young adults.

The participants were prematurely born between 1 November 1988 and 31 October 1990, having a birth weight of ≤1.5 kg, in Stockholm County, Sweden. These individuals were initially part of a prospective population-based study on the incidence of ROP in the neonatal period, followed until 3.5 years of age. The group was re-examined at age 10 and compared with a control group of term born individuals. At 25–29 years of age, 59 of the preterm patients and 44 controls underwent an extensive ophthalmological examination and a developmental test of visual-motor integration.

Those born preterm had lower visual acuity than the controls at distance and near. Mean deviation of the visual field was reduced in those born prematurely, as was contrast sensitivity. A crowding ratio of ≥1.5 was more prevalent compared to controls. In a test of visual-motor integration, the preterm group had inferior results; a neurological complication at 2.5 years of age was the strongest risk factor. Those born preterm had greater values of myopia, hyperopia, anisometropia, and astigmatism, where the highest risk was found in those who had been treated for ROP. The spherical equivalent decreased around 1 D in both groups from 10 years to 25–29 years of age. Strabismus was found in 7/59 (12%) of the preterm group and 1/44 (2%) controls. A greater proportion of those born preterm had subnormal stereoacuity and worse amplitude of accommodation than the controls, but there was no difference in convergence.

In young adulthood, prematurely born individuals had reduced visual function, worse visual-motor integration, higher prevalence of refractive errors and strabismus, and worse stereoacuity than controls. Often, these lifelong effects were correlated with previous cryotherapy for ROP or neurological complications; however, this was not always the case, suggesting that prematurity played a role.

Future directions:

- The impact of preterm birth into later adult life
- The role of neurological defects in the visual problems seen on MRI in adulthood
- The visual perception of this patient group

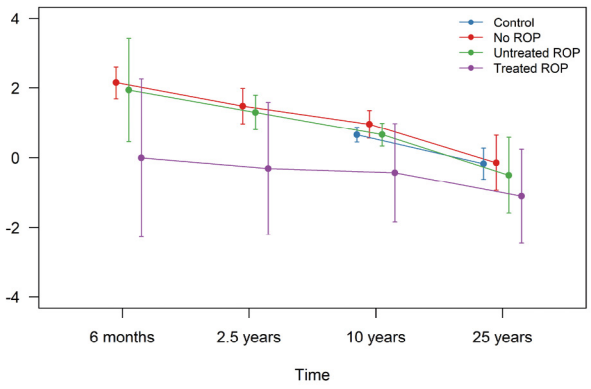

Figure 1. Development of spherical equivalent, in diopters, over time in the left eye of prematurely born individuals and term-born controls. ROP=retinopathy of prematurity. Pétursdóttir, D. 2021. Ophthalmological follow-up in young adults born premature and screened for retinopathy of prematurity. Digital Comprehensive Summaries of Uppsala Dissertations from the Faculty of Medicine 1750. 71 pp. Uppsala: Acta Universitatis Upsaliensis. ISBM 978-91-513-1212-5.

References

1. Pétursdóttir D, et al. Visual function is reduced in young adults formerly born prematurely: a population-based study. Br J Ophthalmol. 2020;104(4):541-546.
2. Pétursdóttir D, et al. Visual-motor functions are affected in young adults who were born premature and screened for retinopathy of prematurity. Acta Paediatr. 2021;110(1):127-133.
3. Pétursdóttir D, et al. Refraction and its development in young adults born prematurely and screened for retinopathy of prematurity. Acta Ophthalmol. 2022 Mar;100(2):189-195.
4. Pétursdóttir D, et al. Strabismus, stereoacuity, accommodation and convergence in young adults born premature and screened for retinopathy of prematurity. Acta Ophthalmol. 2022 May;100(3):e791-e797.
5. Pétursdóttir, D. 2021. Ophthalmological follow-up in young adults born premature and screened for retinopahty of prematurity. Digital Comprehensive Summaries of Uppsala Dissertations from the Faculty of Medicine 1750. 71 pp. Uppsala: Acta Universitatis Upsaliensis. ISBM 978-91-513-1212-5.