

Halved risk for severe retinal disease in extremely premature infants

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A prematurely born infant is being examined for the eye disease ROP at Sahlgrenska University Hospital. Credit: Ann-Sofie Petersson

Risk for a severe form of retinopathy of prematurity, which can cause

blindness in extremely premature babies, was halved when the newborns were given a new supplement combining various fatty acids. This was shown in a Swedish study led from the University of Gothenburg.

The study, now published in *JAMA Pediatrics*, is described as groundbreaking in its field. It documents a clear fall in retinopathy of prematurity (ROP) among extremely premature (EP) infants (born before 28 weeks' gestation), whose retinal blood vessels are not fully developed. The condition can cause visual impairment and, at worst, blindness after retinal detachment.

The study included 206 EP babies in the neonatal wards at the university hospitals in Gothenburg, Lund, and Stockholm over a period exceeding three years, 2016-19.

Roughly half of these newborns were given prophylactic nutritional supplements, orally, with the omega-3 fatty acid DHA (50 milligrams per day and kilogram of body weight), combined with the omega-6 fatty acid [arachidonic acid](#) (twice as much). Today, the latter fatty acid is not included in the supplements routinely administered to EP babies immediately after birth.

In the group of EP infants given the fatty acid supplement, 16 of 101 (15.8 percent) had severe ROP. The corresponding proportion in the control group was 35 of 105 (33.3 percent).

In adults, high levels of omega-6 fatty acids are associated with inflammation and cardiovascular disease. In the fetal period, arachidonic acid is an essential building block for cellmembranes and act as signaling molecules between cells. The omega-3 fatty acid DHA is a vital component for blood vessels and nerve tissue.

Ann Hellström, Professor of Pediatric Ophthalmology at Sahlgrenska

Academy, University of Gothenburg, and chief physician at Sahlgrenska University Hospital, is in charge of the study.

In previous studies, the research group have shown the connection between ROP and low arachidonic acid levels in EP babies' blood. Administering arachidonic acid as a supplement has been a topic of debate, and further [clinical studies](#) on how to devise an optimal mix of fatty acids have been called for.

"In our study, we're taking a step toward answering that question by showing such a distinct reduction in one of the severe neurovascular complications that can arise after extremely preterm birth" Hellström says.

Other results in the study showed no significant differences between the two groups in terms of the incidence of the lung disease bronchopulmonary dysplasia, or in the degree of intraventricular cerebral hemorrhage, which is also common in EP infants. Sepsis occurred in slightly fewer of those who received the fatty [acid supplement](#): 42 of 101 babies, against 53 of 105 in the control group.

Every year, approximately a thousand EP babies in Sweden are screened for ROP. Four of ten born before 30 weeks' gestation suffer from the disease to some degree. In Sweden, blindness can usually be prevented with laser treatment. Worldwide, however, some 20,000 infants go blind or suffer from severe [visual impairment](#) annually as a result of ROP.

More information: Ann Hellström et al. Effect of Enteral Lipid Supplement on Severe Retinopathy of Prematurity, *JAMA Pediatrics* (2021). [DOI: 10.1001/jamapediatrics.2020.5653](https://doi.org/10.1001/jamapediatrics.2020.5653)

Provided by University of Gothenburg

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