The Realisation of Research

RetVas

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Diagnostic/Prognostic
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Description:

RetVas: Medical Device for Quantifying Width and Tortuosity of Blood Vessels

Available For: Exclusive licensing

Summary

Retinopathy of Prematurity (ROP) is a potentially blinding disease affecting babies born prematurely. ROP occurs when the development of the retina and its vasculature is arrested and then proceeds abnormally. Unorganised development at the back of the eye can cause scarring and retinal detachment which may lead to blindness.

The current methods for diagnosing ROP are to evaluate the retina using an indirect ophthalmoscope which does not capture an image or to image the retina with a camera. There is currently a need for a system which can automatically quantify the width and turuosity of a vessel in the eye. Such a system would add greater depth of rigor to the diagnosis of ROP providing a more accurate diagnosis. It would alleviate the need for costly expert ophthalmologists to perform the screening examinations.

There is a significant need for a new screening methodology in developing countries. Currently most preterm babies in middle income countries are not being screened for ROP resulting in an epidemic of blindness for life. This lack of screening is due to a lack of skilled doctors available to perform screening. However, in such countries nurses provide constant care to neonates. RetVas would allow nurses to screen babies for ROP.

The Technology and its Advantages

RetVas is a fast, cost effective and accurate tool ideal for mass screening of retinal vessels in health and disease. RetVas can evaluate 15 images per second compared to the 4-20 images per day a human grader can analyse. RetVas can identify premature babies at risk of developing retinopathy of prematurity requiring treatment. Automated analysis of retinal images is achieved using bio inspired software reverse engineered from human visual cortex physiology. The automated analysis provided by RetVas would allow the screening to be undertaken by a nurse rather than a consultant thus reducing the number of babies needed to be seen by a consultant ophthalmologist by 80%.

Market Opportunity

The WHO has a mission called Vision 2020. The aim of Vision 2020 is to eliminate the main causes of avoidable blindness by the year 2020 by facilitating the planning, development and implementation of sustainable national eye care programmes based on the three core strategies of

facilitating the planning, development and implementation of sustainable national eye care programmes based on the three core strategies of disease control, human resource development and infrastructure and technology incorporating the principles of primary health care document. According to the WHO, retinopathy of prematurity is emerging as an important cause in the middle-income countries of Latin America and Eastern Europe and is likely to become an important cause in Asia over the next decade.

One of the achievements listed by the WHO is that programmes for detecting and treating severe retinopathy in premature infants at risk are expanding throughout Latin America and Eastern Europe and are being established in urban areas in China, India and other Asian countries. Training in paediatric ophthalmology is becoming more prevalent, and tertiary level child eye-care centres are being set up in low-income countries. However one of the limitations cited by the WHO is the shortage of paediatric eye-care professionals and inadequate opportunities for training in paediatric ophthalmology in most low-income countries. RetVas fits within the WHO strategy to examine premature infants at risk of retinopathy of prematurity, treat those with severe disease and promote oxygen monitoring.

For Information, Contact:

Rachel Hemsley
Senior Business Manager
UCL Business PLC
020 7679 9000
r.hemsley@uclb.com

Inventors:

Clare Wilson

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