



Childrens Eyes Signal Later Heart Disease

Fig. 1. Subtle changes in the retinal blood vessels of children can act as warning signs of heart trouble as adults



Australian researchers have found that certain changes occurring in blood vessels in the eyes of heavier and obese children can act as warning signs for potential cardiovascular disease in later life. The warning signs show up as early as the sixth year of life.

The indications are in the form of widening of veins and narrowing of arteries in the retina of the eyes. The retina is a thin layer of neural cells that lines the back of the eyeball. Quite subtle in nature, the widening of the retinal blood vessels is not visible to the naked or untrained eye.

For their research, the study team led by Dr. Paul Mitchell studied 1,740 six-year-old students from 34 schools in Sydney. The researchers made adjustments for differences such as sex, ethnicity, length of the eyeball, birth weight, and mean blood pressure. They found that children who were over the mean weight had unique changes in minute blood vessels in the retinas.

Heavier children had on an average a 2.1 micron larger retinal diameter than their lighter colleagues. On the other hand, the average diameter of their retinal arteries was 2.2 microns narrower than the lighter children. Arteries bring oxygenated blood

from the heart while veins take the low-oxygen blood back to the heart.

The changes observed in the children are surprising and shocking because these have previously only been observed in the retinas of teenagers and adults, never in children so young. It was initially thought that the heart risk profile developed in adolescents and young adults, but (this study) suggests that these changes probably occur even at an early age, said Dr. Mitchell, a Professor at the University of Sydneys Centre for Vision Research.

It may be worthwhile examining children or adolescents for subtle retinal vessel size as these could be markers of a persons heart risks as they get older into adulthood, he said. The reason for widening of the veins may simply relate to a larger blood volume associated with a heavier child. Its harder to explain the effects on the retinal (arteries). It could be a reflex response in obese children, but that remains to be seen, Dr. Mitchell added.

He feels it is also necessary to check if the changes in blood vessels can be reversed. In adult populations, we havent (seen) reversibility so often. For the narrowing of arteries associated with elevated blood pressure, even when blood pressure is back to normal, the arteries dont seem to respond, but we dont know about the (retinal blood vessels), Dr. Mitchell said.

Reporting their study findings in the International Journal of Obesity, the researchers expressed the opinion that children should be extensively monitored for these subtle blood vessels changes as they can provide early warning of potential adulthood heart risks such as hypertension and stroke in the children.