

Young scientist helps identify cause of widespread eye disease

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Branch retinal vein occlusion – blockage of the blood vessels that channel blood from the retina – is a common eye disease. A type of blood clot in the eye, the disease causes reduced vision, and people with the disease also typically have an increased risk of hypertension, diabetes and other serious conditions. A young scientist from the University of Copenhagen has made a significant contribution to finding the cause of the disease.

Mette Bertelsen and her colleagues photographically verified the diagnosis of branch retinal vein occlusion in 1168 people.

A team of researchers at the University of Copenhagen, Glostrup Hospital and several other ophthalmology departments at Danish hospitals have now shown that it is highly probable that thickening of the arterial walls is behind the common [eye disease](#) known as branch retinal vein occlusion – a type of blood clot in the eye that blocks the vessels that transport blood from the retina. The disease leads to reduced vision and affects more than 14 million people worldwide.

"Our new results indicate that branch retinal vein occlusion is caused by thickening of the arterial wall. This makes it crucial for doctors to treat patients diagnosed with the disease with medicine to [lower blood pressure](#) in order to prevent blood clots from forming in the heart and brain. Branch retinal vein occlusion is often a sign of increased risk of blood clots in other parts of the body," explains Mette Bertelsen, PhD student at the University of Copenhagen.

Targeted treatment

Mette Bertelsen, head of the research project, and her colleagues photographically verified the [diagnosis](#) of branch retinal vein occlusion in 1168 people. They identified the patients' other diseases with the help of Danish national registries and compared the data to that of 116.800 healthy people.

By looking at the illness and [mortality statistics](#) of Danes diagnosed with a blood clot in the [retina](#)'s main [blood vessels](#), both before and after the occurrence of the retinal blood clot, Mette Bertelsen and her colleagues has now shown that while these patients show a higher frequency of arterial disease in the heart and brain, they do not display a higher frequency of venous disease. This new knowledge, which has been published in the *British Medical Journal*, means that disease prevention and treatment of these patients should be targeted at [hypertension](#), diabetes and atherosclerosis, while doctors can save patients from unnecessary treatment with anticoagulants.

Thickened arteries the villains

Doctors have long debated the three most likely theories about what causes branch retinal vein occlusion. Discussion centres on whether the disease is due to a) conditions in the veins that cause [blood clots](#), b) a change in the composition of the blood, or c) blockage of the vein due to compression from an adjacent artery that has thickened and thus compresses the vein and hinders blood flow.

"To understand what is actually happening, it can be helpful to picture a garden hose that has been squeezed by a larger hose, cutting off the water supply. That is essentially what happens when a vein is compressed by a thickened artery. Clearly, the consequences can be serious,"

explains Mette Bertelsen. She adds that no one knows exactly how many Danes suffer from branch [retinal vein occlusion](#), but that more than 14 million people have the disease worldwide.

Provided by University of Copenhagen

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