Half-time examination abstract

**Retinopathy and hard-to-heal foot ulceration in people with diabetes mellitus**

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**Introduction**

Some of the complications of Diabetes mellitus are known since long. The combination of Diabetic Retinopaty (DRP) and foot ulceration (DFU) has often been reported but mostly in general terms. The causes of the ulcerations are thought to be neuropathy, macro- and microvascular disease leading to ischemia and repetitive slight traumas. DRP is a neurovascular disease with inflammatory traits. We have studied retinopathy more in detail in cases with Diabetes Type 2 with and without hard-to-heal DFU.

**Methods**

The patient cohorts were:

Paper 1. A cohort of twenty persons with diabetes. The circulation in the foot was estimated by ankle/brachial pressure quotient, toe blood pressure and transcutaneous oximetry. The macular thickness was measured by Ocular Coherence Tomography.

Paper 2. 90 persons with diabetes Type 2 and hard-to-heal DFU (not healed in spite of 3 months of treatment at a specialized foot clinic). This group was compared to 180 age-, duration- and gender-matched persons with type 2 diabetes without a history of DFU. The retinas were digitally photographed and visual acuity tested with ESDR and Snellen visual charts. The photos were graded according to the Airly House modification of the WESDR method. Presence of macular edema was determined according to the ETDRS directions.

Paper 3. A group of 65 patients were randomly and double-blindly allocated to Hyperbaric oxygen treatment (HBOT) respectively hyperbaric air for their chronic DFUs. The two groups were followed for two years.

**Results**

Paper 1: TcPO2 is a relevant measure of peripheral microvascular disease, if low indicating an increased risk of macular edema.

Paper 2: Persons with hard-to-heal DFU have more DRP, more macular edema and lower visual acuity than their controls.

Paper 3: The retinopathy and visual acuity in the HBOT and placebo groups did not differ after 2 years, indicating that Hyperbaric oxygen neither is beneficial nor detrimental for the eyes.
**Importance**

We have showed that diabetic peripheral microvascular disease may be mirrored in the retina, that the presence of chronic DFU indicates more severe retinopathy and the reverse, and that hyperbaric oxygen and hyperbaric air do not differ in their actions on the eye.

