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Morphological changes of corneal nerve fibers associated with diabetic retinopathy

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Corneal *in vivo* confocal microscopy (IVCM) is a rapid, non-invasive diagnostic technique that is used as a marker of diabetic neuropathy. The aim of study was to evaluate morphological changes of corneal nerve fibers in patients with DM and to establish the correlation between corneal neuropathy and diabetic retinopathy (DR). 38 patients with DM type 2 and 30 healthy control subjects were scanned using IVCM. Patients with DM were classified into three groups: patients without DR (n=17), patients with non-proliferant DR (n=17) and patients with proliferant DR(n=6). *Heidelberg* HRT III IVCM was used to get the images and to quantify corneal nerve fiber density (CNFD), corneal nerve branch density (CNBD) and corneal nerve fiber length (CNFL). The duration of DM was significantly lower in group without DR in comparison to the group with non–proliferant DR and proliferant DR ($p \leq 0{,}001$). The mean endothelial cell densities and CNFD, CNBD, CNFL were significantly lower in patients with DM compared with healthy control subjects ($p=0{,}018$, $p<0{,}001$, $p<0{,}001$, $p<0{,}001$, respectively). CNFD without DR was 25.6±1.9 fibres/mm2, with non–proliferant DR – 19.2±2.5 fibres/mm2 and with proliferant DR – 13.6±2.2 fibres/mm2. CNBD without DR was 47.07±3.2 branches/mm2, with non–proliferant DR – 32.76 ± 2.3 branches/mm2 and with proliferant DR – 17.83±2.8 branches/mm2. CNFL without diabetic retinopathy was 23.6±1.7 mm/mm2, with non–proliferant DR – 19.1±1.5 mm/mm2 and with proliferant DR – 13.0±1.7 mm/mm2. When comparing the group without DR with the non-proliferant DR and proliferant DR group there was a statistically significant difference between all morphological parameters of corneal sub-basal nerve plexus ($p<0{,}001$). Corneal nerve abnormalities occur before the development of diabetic retinopathy. A progressive decrease of CNFD, CNBD and CNFL correlated with increasing severity of diabetic retinopathy.

Biography

Alina Aligera is a member of ESCRS, EPOS, YBO and National Society of Ophthalmologists. Her recent interest in research is based on *in vivo* corneal confocal microscopy of diabetic patients in association with diabetic neuropathy and diabetic retinopathy after completing a training course at the University of Manchester. She has a keen interest on cataract surgery, as well as she is involved in medical retina and uveitis treatment and clinical research both adults and children.

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