During the late breaking news session on Sunday morning, speakers presented particularly timely abstracts on a number of different research topics.

Irmante Derkac, ID, Kaunas, Lithuania, shared her results on the “Relationship Between Corneal Sub-Basal Nerve Plexus Morphology, Function, and Electrochemical Skin Conductance in Type 1 Diabetes Mellitus Patients with and without Diabetic Neuropathy.”

Diabetic neuropathy can be defined as the presence of symptoms and/or signs of peripheral nerve dysfunction in people with diabetes after the exclusion of other causes, she said. Diabetes mellitus (DM) is the most common cause of neuropathy worldwide, Dr. Derkac added.

The prevalence of diabetic neuropathy (DN) in type 1 DM has been postulated to be over 50% by 25 years of diagnosis. About 25 to 35% of neuropathies are associated with pain, and having painful DN has a significant and negative effect on quality of life, she said.

Dr. Derkac said that data shows that small fiber damage may precede large fiber damage in diabetic neuropathy, and some studies even estimated that intraepidermal nerve fiber (ENF) density was significantly reduced in patients with normal nerve conduction, which may suggest early damage to small nerve fibers. Small fibers make up 79.6% to 91.4% of peripheral nerve fibers, Dr. Derkac said, and damage to this type of fiber underlies symptoms of painful DN.

The same class of fibers assessed both histologically and functionally in the foot are impaired in diabetic neuropathy, she said. Additionally, about 50% of patients with diabetes who had no clinical signs of neuropathy had abnormal corneal sub-basal nerve plexus changes, which demonstrates that corneal changes precede clinically detected peripheral nerve changes.

Corneal confocal microscopy can detect small sensory corneal nerve fiber loss, Dr. Derkac said. Additionally, Sudoscan is a non-invasive test that is designed to evaluate the secretory function of sweat glands as an index of DN. But, few studies have estimated the correlation of corneal sub-basal nerve fiber density and sweat gland nerve fiber density with intraepidermal nerve fiber density, she said.

The purpose of Dr. Derkac’s study was to estimate and compare corneal sensitivity, corneal sub-basal nerve fibers morphological changes in type 1 DM patients with and without DN, and evaluate the correlation with electrochemical skin conductance (ESC). In total, the study looked at 30 patients with type 1 DM, with DN diagnosed based on vibration, temperature, pinprick sensation, and deep tendon reflexes. There were 10 patients with DN and 20 without. Statistically significant differences were found between patients with and without diabetic neuropathy, Dr. Derkac said.

“Patients with diabetic neuropathy had significantly lower corneal sub-basal nerve fiber density, length, corneal sensitivity, and ESC of feet than diabetic patients without diabetic neuropathy,” she said. Statistically significant correlations were found between CNFD, CNFL, CNN, corneal sensitivity, and ESC of feet in diabetic patients. “Further studies using corneal confocal microscopy and a Sudoscan device as novel noninvasive techniques are needed to locate the earliest alterations in corneal nerves in patients with type 1 DM possibly predicting the development of neuropathy,” Dr. Derkac concluded.

A community-based cataract surgery program

Jewel Sandy, MD, Oklahoma City, also presented during that session, focusing on visual outcomes of a community based cataract surgery program in Swaziland, speaking about a global eye care program. Cataract is a leading cause of preventable blindness, she said, and the goal is to eliminate preventable blindness. The program she discussed, the Dean McGee Eye Institute in Oklahoma City, adheres to the WHO Vision 2020 guidelines. They have local programs, as well as international programs in Swaziland and China, with participation from residents, fellows, and volunteer ophthalmologists.

In Swaziland, Dr. Sandy said, the population is 1.4 million with a 1% prevalence of blindness, 6,000 people blind from cataracts, and 20,000 with significant vision loss. Additionally, there are only 2 ophthalmologists in the whole country and inadequate infrastructure and limited access to care.