Elisabetta Pilotto, MD, F.EBO

Department of Ophthalmology, University of Padova, Padova, Italy

Title of Project: Awareness and screening of age-related macular degeneration in Italy: a new multimodal imaging approach.

Background: Age-related macular degeneration (AMD) is a common cause of vision impairment and blindness affecting approximately 9% of the global population. Visual impairment has a serious impact on older adults' ability to perform daily activities, dramatically interfering with their ability to live independently. Approximately 0.4% of the general population has late or advanced AMD with the prevalence of advanced AMD rising to 8% among those 75 years of age and older. While the prevalence of all types of AMD has somewhat declined over the past decade, due to enhanced medical prevention and treatment options, the number of people with all types of AMD is expected to increase due to the rapid and consistent growth of the aging population. Recent projections estimate that worldwide the number of individuals with AMD will reach 196 million in 2020 and 288 million in 2040. However, more than 30% of people have knowledge neither about this macular disease nor its visual functional consequences. Fundus photography is usually performed to evaluate prevalence or incidence of AMD in population-based studies among elderly residents. Eventually, the acquired fundus photographs are graded according to international grading scales. Spectral-domain OCT (SD-OCT) is a non-invasive tool that provides retinal cross-sectional images of the posterior pole. It provides new imaging modality of the macular area and allows to easily identifying the signs of early and late AMD. SD-OCT it has become the most diffuse imaging procedure in clinical practice in the diagnosis and in the follow-up of AMD patients.

Purpose: To aware elderly people about AMD and to investigate the impact of the use of spectral-domain optical coherence tomography (SD-OCT) combined with fundus photography on the diagnosis of AMD in an Italian elderly population campaign.

Methods: Non-mydriatic SD-OCT devices, that allows to automatically scan both eyes producing simultaneously an OCT scan and a true colour fundus image, were used to screen volunteers older than 60 year-old were screened in a AMD campaign. The AMD campaign was published by means of local newspapers, internet, television, personal communication and screening site. All acquired images were collected by a single reading center and reexamined by two independent expert readers. The image quality of both imaging modalities was analyzed. For every examined eye evaluable OCT scan and fundus colour image were separately graded for signs of any stage of AMD (early, intermediate and advanced).

Results: During150 dedicated days, 8.000 screening procedures were performed. People were aware about AMD campaign by means of: local newspaper in 17% of the cases, internet in 10%, local television in 15%, personal communication in 25% and screening site in 33%. Mean age of examined people was 65 years. In 87.56% of the screening procedures the image quality, of at least one of the two imaging modalities, was enough to grade the acquired images. 4400 eyes were re-examined by the two independent readers at the reading center. Any stage of AMD was present in 410 eyes (9.3%). Other maculopaties (macula edema due to retinal vascular diseases, high myopia, macular pucker, diabetic retinopathy and macular hole) were detectable in 198 eyes (4.5%). AMD diagnosis was performed by means of OCT scan in 392 cases (95.61%) and by means of color fundus image in 210 cases (51.22%). Using both imaging modalities the absolute inter-grader agreement for AMD classification was 82.7%.

Conclusion: AMD campaign is useful to aware people about this sight threatening macular disease. The multimodal imaging approach may be a new screening modality for AMD, allowing a higher proportion of gradable examinations and an easier AMD classification.