

# Invisible enemy – a case of a patient with undiagnosed diabetic retinopathy

Diabetes, referred to as the silent killer, is an epidemic of the modern world. The main health issues generating human suffering, disability, and costs are the complications of diabetes, including diabetic retinopathy (DR), which is asymptomatic in its early stages.

## Case presentation.

### Visit No. 1.

A 73-year-old woman with type 2 diabetes since 2012, under the care of her GP, was admitted for her first visit to the Diabetes Clinic at the Provincial Specialist Hospital in Olsztyn. The patient does not report any complaints and denies any complications related to diabetes. She is being treated with metformin 2x850 mg and gliclazide MR 90 mg. Her medical history includes long-standing hypertension, hyperlipidemia treated with statins, chronic kidney disease (since 2022), nicotine addiction, and a history of stroke (2021). In her family history, there is type 2 diabetes complicated by diabetic foot in her father. The patient does not adhere to a diabetic diet and has no regular physical activity. According to the patient's account, there are no complications; her last eye examination was four years ago and showed no signs of DR.

## Additional tests and treatment modifications

In the physical examination, deviations noted include signs of obesity (body weight 90 kg, height 167 cm, BMI 32.27 kg/m<sup>2</sup>, waist circumference 122 cm), and blood pressure of 158/92 mmHg. The patient's lab results are as follows: HbA1C 7.9 %, creatinine 1.4 mg/dl, eGFR 50.9 ml/min/1.73 m<sup>2</sup>, ACR 128 mg/g. She measures her blood glucose levels only in fasting conditions, which range from 135-180 mg/dl. The patient's treatment was modified: sulfonylureas were discontinued, metformin was increased to 3x850 mg, and empagliflozin 1x10 mg was added; the patient

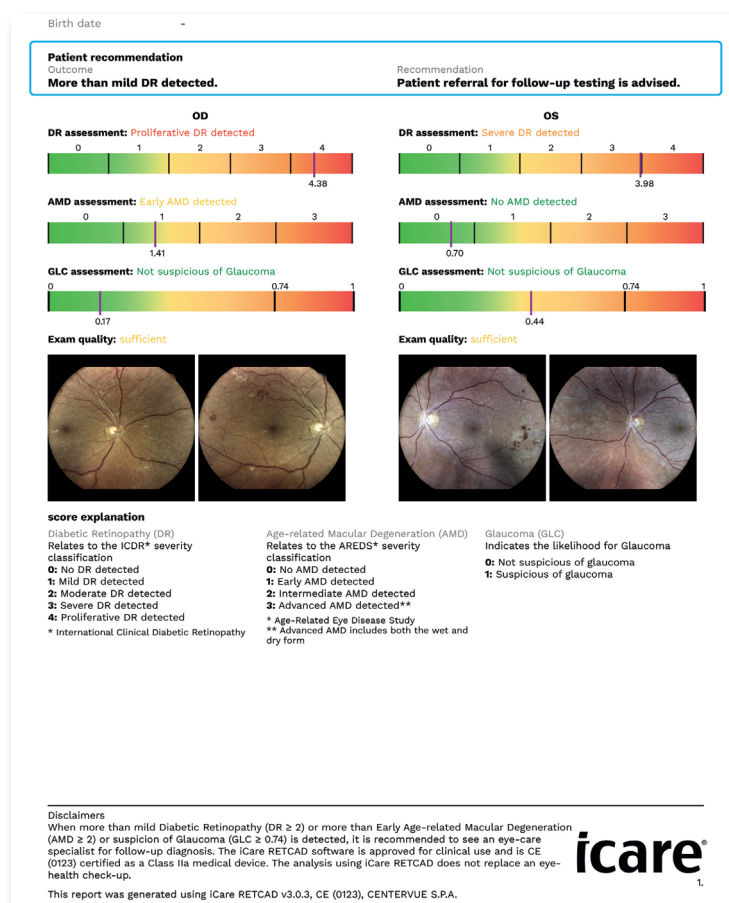


Fig. 1. Results analyzed by iCare RETCAD.

did not agree to the proposed semaglutide. The hypertension treatment was also changed, and ezetimibe was added to the treatment for hypercholesterolemia. The calculated SCORE for diabetes is 38 %. The patient received dietary and diabetes education regarding pharmacotherapy and diabetes complications.

## Fundus camera examination

A fundus examination was performed using the iCare DRSplus fundus camera, which is available at the local Diabetology Clinic. The results analyzed by iCare RETCAD revealed signs of severe NPDR in both eyes, as well as moderate AMD in the right eye and early AMD in the left eye (Fig. 1).

## Diabetes complications

Following the conducted examinations, diabetic nephropathy at stage G3a A2 was diagnosed, along with severe bilateral non-proliferative diabetic retinopathy and age-related macular degeneration (AMD). The patient was urgently referred to the ophthalmology clinic. In order to confirm the diagnosis, fluorescein angiography was performed, which revealed retinal neovascularization, leading to a diagnosis of proliferative diabetic retinopathy (PDR) in both eyes. The patient was referred for panretinal photocoagulation. An OCT (optical coherence tomography) scan of the retinas showed numerous soft drusen without signs of choroidal neovascularization and without macular edema. Regular ophthalmologic follow-up was recom-

mended to monitor for potential progression of degeneration changes of macula.

## Visit No. 2

Follow-up visit after three months. The patient reports no complaints and denies any visual disturbances. General condition is good; the patient states she adheres to a diabetic diet, makes an effort to swim regularly, and has quit smoking. Self-monitoring shows improvement in blood pressure and blood glucose levels; HbA1c is 7.1 %. Additionally, a weight loss of 5 kg was noted. ACR decreased to 35 mg/g, and GFR is 55 ml/min/1.73 m<sup>2</sup>. The calculated SCORE2 Diabetes risk is 25 %. The patient continues regular follow-up visits at the Ophthalmology Clinic.

## Conclusion

This case report demonstrates the benefits of DR screening using AI-powered image analysis. Early detection of retinopathy and urgent referral to an ophthalmologist for further diagnostics and treatment provide a real opportunity to halt the progression of DR and prevent vision loss.