
Jasmina Ćirić¹

INDEX CASE: DIFFERENTIAL DIAGNOSIS OF DYSTHYROID OPTIC NEUROPATHY

Dysthyroid optic neuropathy (DON) is an impairment of optic nerve function in Graves' orbitopathy (GO). The most common cause is an increase of retro-orbital tissue which compresses the optic nerve or its blood supply, especially in the case of tight orbital septa and the lack of eye proptosis. Less frequently, DON may be caused by optic nerve stretching, seen on orbital CT as globe tenting or conical appearance of the posterior globe. The diagnosis of DON is suspected if the symptoms and signs of severe GO are present, particularly if the vision is reduced. Some ophthalmological findings may be useful in DON diagnosis such as swollen and pale optic disc, loss of colour vision and visual acuity (VA), relative afferent pupillary defect (RAPD). Smoking, diabetes, sex, age and unsolved hyperthyroidism may be risk factors for DON. Unfortunately, in some cases the diagnosis of DON may be equivocal even after the additional investigations were done. The use of multiple diagnostic methods such as orbital CT/MRI, visual evoked potential (VEP) and perimetry significantly improves the early diagnosis of optic neuropathy.

A 70-year-old male was referred to our hospital for the treatment of GO. He had a history of progressive sight loss in the right eye for the last 3 years due to mature cataract. In the morning of 25 December 2014, he noticed the appearance of lid swelling, conjunctival redness, sore eyes and light sensitivity. He was treated by ophthalmologist with local antibiotic and lubricant (VA OD: light perception with projection/ VA OS: 0.9). Since he was clinically hyperthyroid and had symptoms for 6 months thyroid hormones were measured and the finding confirmed Graves' disease (FT4: 59.1; TSH<0.005). The treatment with methimazole normalized FT4 in 2-3 months, but proptosis, blurred vision, orbital pain and discomfort have appeared. Left VA decreased to 0.7 in February and 0.6 in April 2015. He was a smoker for 50 years, but he reduced smoking from 40-60 to 20 cigarettes per day. Unfortunately, he was not regular in taking drugs and by the time of the first admission in June 2015 he was again hyperthyroid. Thyroid function tests were: FT4 51.5 ng/l, TSH 0.005 mU/l, TRAb 6.9 U/l, TPO Ab 197 U/ml (0-34). Clinical activity score (CAS) was 5/7, palpebral apertures (PA) were 17/16 mm, lagophthalmos due to protrusion of plica and caruncle was 1-2mm, exophthalmos measured by Hertel exophthalmometer was

¹ Jasmina Ćirić, Clinic of Endocrinology, Diabetes and Metabolic Diseases, CCS

26/23 mm, VA OS was 0.3, best corrected VA (BCVA) OS was 0.5 and RAPD was not detectable. Colour vision was generally disturbed, particularly for red and probably for green colour (Ishihara chart). There was a moderate restriction of motility. By ophthalmological examination an incipient cataract of the left eye was seen, optic disc was normal and on orbital US extraocular muscles (EOM) were moderately enlarged. VEP was normal on the left eye. Orbital MRI revealed stretched optic nerve but without globe tenting and compression at the orbital apex, with no other radiological sign of DON. EOM were enlarged maximum 11 mm in diameter. Normal thyroid function was restored promptly. GO was treated by i.v. methylprednisolone at a cumulative dose of 7.5 g and by local measures. Proton pump inhibitors were added for gastric protection and bisfosfonates for lumbar osteoporosis (T -2.8). After the treatment CAS was 2/7, PA were 16/16 mm, exophthalmos was 24/22 mm, VA OS was 0.6, BCVA OS was 0.8. Orbital US showed *reductions* in EOM size (1-3 mm).

The assessment of GO is unique for every patient due to a great variation of its clinical presentation, especially if ocular comorbidity is present. Cataract is very common and may modify signs and symptoms of GO, make ophthalmological investigation less conclusive, difficult to interpret in DON and impact on credibility of standardized parameters for treatment outcome validation. This case opens discussion on the role of different methods in the diagnosis of optic neuropathy, therapeutic choices and the limitation of the standard clinical assessment of the treatment success in GO complicated with cataract.