**Both Acute and Chronic Inner Nuclear Microcystic Change in Three Patients with Non-Arteritic Anterior Ischaemic Optic Neuropathy: A Retrospective Case Series.**

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**Background/Introduction:**  Microcystic macular oedema (MMO) is associated with severe optic atrophy of different aetiology. However, similar changes have also been described in *retinal* pathology and exact pathogenesis of MMO is still debated.

**Aims and Methods:** A retrospective observational case series was carried out in the University Hospital of Liege, Belgium. The medical records of patients who were referred to our neuro-ophthalmology department with non-arteritic anterior ischaemic optic neuropathy (NA-AION), between 2014 and 2021, were reviewed.

**Results:** In the cohort of 34 patients (mean age: 60±12.5 years; 65.6% were male) with NA-AION, we identified a transient microcystic change in the INL associated with optic disc swelling in 19 eyes at presentation. Early vacuoles were associated with transudation of intra and subretinal fluid originating from the optic disc. Among patients who had shown this transient change subsequently 3 developed MMO which remained fixed during the period of observation (range:12-34 months). MMO was observed in patients with severe GCC (mean loss of GCC thickness in superior hemi-macula: -28.2±5.2 µm (-33.3%, range: -22.3 to -30.3 µm) and in inferior hemi-macula: -30.7±5.6 µm (-31.0%, range: -24.3 -34.8 µm) and RNFL (mean RNFL : 57.7±2.5µm) thinning at 6 month.

**Conclusion:** Our study indicates two causes of MMO in the same patient suffering from NA-AION, one reversible and the other likely permanent. This finding highlights the distinction between genuine oedema related to transudation of fluid in swollen disc and the phenomenon observed in retrograde maculopathy related to the degree of RNFL loss.

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