Purpose:
The presence of hyper-reflective subretinal lesions that appear grey on spectral domain optical coherence tomography (SD-OCT) was observed in our clinical setting in patients diagnosed with exudative age-related macular degeneration (AMD). These lesions presented certain characteristics, which we suspected to be signs of choroidal neovascularization (CNV) activity.
We decided to perform a study of these lesions with the purpose of observing and analyzing their response to anti-VEGF therapy.
We hypothesized that these hyper-reflective subretinal lesions would regress after treatment with intravitreal anti-VEGF therapy.

Methods:
Retrospective interventional study.
Data from 28 consecutive patients affected with neovascular AMD that presented subretinal hyper-reflective lesions as visualized by SD-OCT were collected.
At study entry, patients underwent treatment if neovascular activity was present (group A), defined as either decrease of best corrected visual acuity (BCVA) of 10 ETDRS letters, and/or presence of fluid on OCT, and/or leakage from CNV on fluorescein angiography. If none of these criteria were found at study entry, patients were observed for signs of evolution (control visit at one month, standard protocol in our clinic) (Group B).
We retrospectively assessed the morphological effects of the treatment on grey hyper-reflective subretinal lesions, from baseline to 2 months and to final visit (6 months).

Results:
Thirty eyes of 28 patients (5 male, 23 female, aged 57-91 years) were included.
At study entry, grey lesion was associated with exudative features in 24/30 eyes (85%), including subretinal fluid (SRF) in 20/30 eyes (66%), and retinal cystoid spaces in 11/30 eyes (35%). Twenty-four eyes with exudative features at study entry received prompt treatment. 6 eyes without exudative features at study entry received deferred treatment (after one-month observation), when exudative signs emerged (SRF in 3/6 eyes and retinal cystoid spaces in 5/6 eyes).
Ninety-three percent of the grey lesions responded to ranibizumab treatment at two months and 77% at six months. Grey hyper-reflective subretinal lesion thickness was significantly reduced after treatment at both two months (from 482±116μm to 367±102μm, P<0.001) and six months (from 482±116μm to 381±71μm, P<0.001).

Conclusion:
Our findings suggest that grey hyper-reflective subretinal lesions might be considered as a qualitative criterion for retreatment of exudative AMD.
It may represent an early sign of active choroidal neovascularization, and should prompt to early treatment.

References:

Figure 1: Study flow chart of hyper-reflective subretinal lesions as seen on optical coherence tomography (OCT) in patients with neovascular age-related macular degeneration.
Figure 2: Spectral domain optical coherence tomography (SD-OCT) follow up of grey hyper-reflective subretinal lesion in a patient with neovascular AMD.
Figure 3: Spectral domain optical coherence tomography (SD-OCT) follow up of group B patients (deferred treatment).
Table 1: Summary of clinical findings in the subfoveal age-related macular degeneration treated with subfoveal hyper-reflective subretinal lesions.