



Evaluation and inter-observer analysis of retinography existing clinical classification system to categorize moderate retinopathies.



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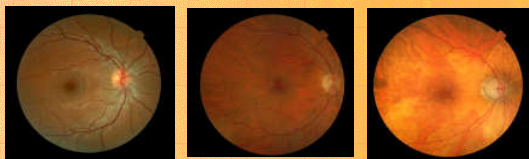
Loss of vision due to Age-Related Maculopathy (ARM) is an irreversible process, therefore it needs an early diagnosis of the pathology.

Up to now, in-depth research has been made in the ARM treatment area, although not in the initial stages diagnosis area. To detect advanced ARM condition is more or less easy, however it is difficult to detect an early ARM condition. This has become worse due to the lack of a standard initial stages ARM classification, ratified by the scientific community.

The **purpose** is to discriminate between different moderate retinopathies according to the Clinical Age-Related Maculopathy Staging System (CARMS) by using several retinographies to analyze the CARMS reliability in an inter-observer's diagnosis.

Methods

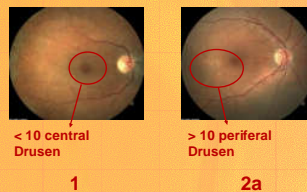
55 retinographies were classified by using CARMS system, which categorizes the images depending on **Drusen** presence or absence, retinal pigment epithelium irregularities, geographic **atrophy**, pigment epithelium **detachment** and choroidal **neovascularisation**.



The method followed consisted of 2 different sequences with each of the 3 evaluated systems, made by 2 experts in a blind, independent way. The goal of the doubled-classification-method, with changing, non- randomised order, was to reject the influence of the evaluation of the previous image in the following one (Velo's effect).

Inter-observer's repeatability was checked, because the Kappa index was calculated, as an agreement parameter between both Experts

KAPPA	CONCORDANCE
<0.20	Bad
0.20 - 0.40	Low
0.40 - 0.60	Moderate
0.60 - 0.80	Good
0.80 - 1.00	Excelent



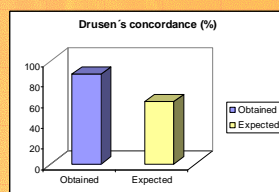
CARMS	
1	No drusen / <10 small drusen without pigmentation changes
2a	Drusen
2b	Hiper - Hipopigmentation
2c	Drusen and Hiper - Hipopigmentation
3a	Retina detachment without drusen
3b	Retina detachment with drusen
4	Geographic atrophy in central macula or geographic atrophy less than 350Mm
5	AMD exudative/ Hemorrhagical or Serosum retina detachment / CNVM with subretinal or sub RPE hemorrhages or fibrosis, or scars consistent with treatment of AMD

Cohen, J. A coefficient of agreement for nominal scales. *Edu. And Psyc. Measur.*, 1960, 20: 37-46.

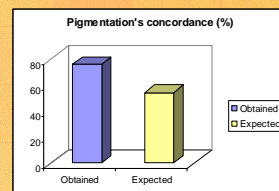
Results

Inter-observer's reliability analysis was the following:

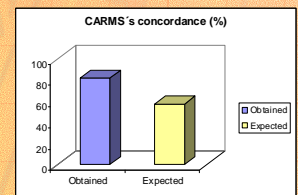
Drusen's concordance obtained was **87.27%**. The expected values were 59.50% and **60.31%**. Kappa index was **0.6802**.



Pigmentation concordance obtained was **76.36%**. The expected values were 59.50% and **54.46%**. Kappa index was **0.4814**.

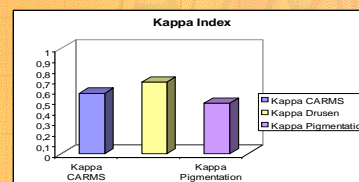


CARM's concordance obtained was **81,89%**. The expected values were 59.50% and **57,39%**. Kappa index was **0.5743**.



The reliability measured by Kappa index followed the rule:

0.80-1.00 (Excellent), 0.60-0.80 (Good) y 0.40-0.60 (Moderate), 0.20-0.40 (Low), <0.20 (Bad).



Conclusions

CARM's classification is a good tool to differentiate between different degrees of minor and medium rethinopathies, although it is not a very accurate tool to check, in longitudinal research, minimal progress of the pathology.

Kappa indexes obtained for the inter-observer analysis shown moderate concordance for the inter-observer analysis, except in the Drusen case, dichotomy's variable, which presented good reliability. A higher discrepancy in the first retinas, which were classified, was observed. **This means that a previous training is necessary.** must be enhanced The worst behaviour of the Pigmentation parameter must be enhanced with regard to the Drusen parameter, thus the global reliability falls.

Future research will design new classification criteria that allows a more reliable categorizing of early ARM.

References

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