

# Age-Related Macular Degeneration is Not Macular Process Only – Peripheral Retina is Attacked Too

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## ABSTRACT

On a small island of Rab, geographical latitude 44°40' N, with the highest solar radiation among Adriatic islands, 1371 patients were examined in 2003–2005 period, with the aim of estimating the frequency of the patients number with Age-related Macular Degeneration (AMD), and further if the peripheral retina is damaged similarly as the macular region. In the first group of agriculturists and fishermen (n=1300) we estimated the AMD, initial and middle stage of AMD, in 18% of population, but in urban population only by 2 patients. Perimetric analysis with computerized Kowa perimeter; estimated that the peripheral retina is affected similarly as the macular region. Author concludes that for this reason, the usual term of »Age-related Macular Degeneration« should necessarily be named with the suffix »Peripheral«, or »Age-related Retinopathy«.

**Key words:** macular degeneration, solar radiation, perimetric analysis

## Introduction

In the whole world the Age-related Macular Degeneration (AMD) is today a social-medical problem, and the leading factor to vision loss<sup>1</sup>. No doubt it is estimated that environment and climate are the most important risk factor in development of AMD<sup>2-6</sup>. Today we know that, beside the UV-B radiation with biochemical reactions, the UV-A can also initiate deleterious biochemical

reactions<sup>7-16</sup>. Histopathological findings in AMD today are mostly known<sup>4,6</sup> as well as biochemical reactions in retinal photobiology<sup>17-20</sup>, but the analysis and estimation that the peripheral retina is also attacked is in the start of<sup>4,21,22</sup>. The aim of this study is to estimate, with quantitative perimetric analysis of patients with AMD, in which percentage is peripheral retina affected.

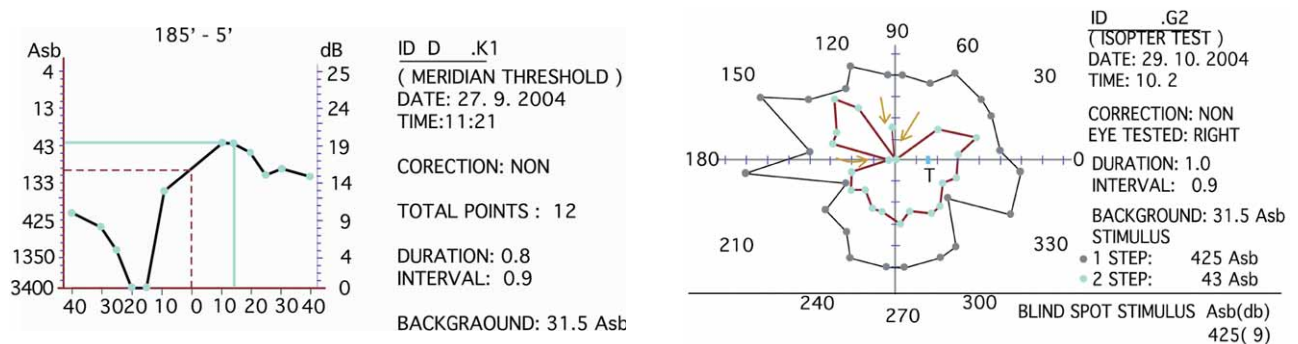


Fig. 1. Characteristic isopteres with defect in macular region, and in peripheral region, too in all patients with Age-Related Macular Degeneration.

## Patients and Methods

Our epidemiological study of AMD in correlation with influence of solar UV radiation, was performed on a small island of Rab, situated geographically in the North Adriatic Sea. The aim is to estimate in which percentage is appearance of AMD related to solar UV-radiation

We had two different groups of population (aging 45–65 years): the first group (n=1300) are agriculturists and fishermen, and the second group (n=71) are urban people. Beside the usual ophthalmic examination of the patients, special attention was paid to the visual field examination. Isopters analysis and meridian thresholds were estimated.

## Results and Discussion

Figure 1 shows characteristic isopteres with defect in macular region and in peripheral region, too in all patients with AMD. Meridian threshold analysis revealed higher means in macula than in peripheral retina. Figure 2 shows foveolar thresholds in two different populations. There is a significant increase of foveolar thresholds in population of agriculturists and fishermen, in which AMD is present in 18%. In urban people AMD appears in 2.5% only. In analysis of this clinical trial, we can conclude that in AMD there are both macular region and pe-

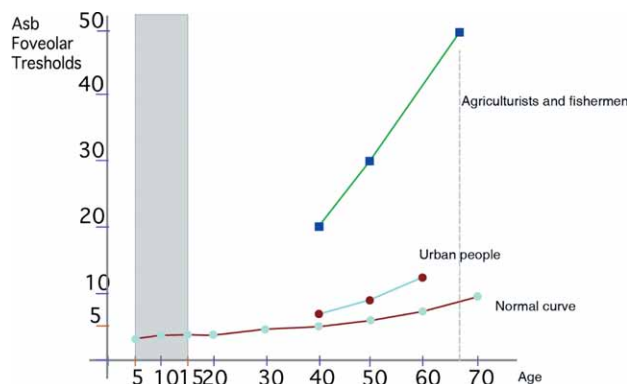


Fig. 2. Foveolar thresholds in two different populations – Urban and Agriculturists and fishermen.

ripheral retina affected. These clinical findings establish the truth of recent histopathological findings<sup>4</sup>, and proteomic analyses<sup>21,22</sup>.

For this reason, the author suggests that the name of AMD: »Age-related Macular Degeneration« is better and more exactly defined with the term »Age-related Retinopathy«.

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## **SENILNA MAKULARNA DEGENERACIJA NIJE SAMO DEGENERACIJA MAKULARNOG PODRUČJA NEGO I PERIFERIJE RETINE**

### **S A Ž E T A K**

Otok Rab, smješten sjeverno u Jadranskom moru spada u područje s jednom od najviših vrijednosti solarne radijacije. Autor je osobno vršio vlastita mjerenja UV-B i A, te zamijetio abnormalno visoke vrijednosti i UV-A, u mjesecima srpnju i kolovozu. Autor je u ovo kliničko ispitivanje uključio 1371 pacijenta, podijelivši ih u dvije skupine. Prvu skupinu predstavljala je populacija poljoprivrednika i ribara koji su kronično izloženi sunčevoj svjetlosti (cca 10 sati dnevno) i bez ikakve zaštite. U drugoj skupini nalazi se populacija ljudi iz grada, koji relativno malo borave na suncu (2–3 sata dnevno) i uvijek koriste sredstva zaštite, osobito sunčane naočale. U svih bolesnika izvršen je očni pregledu midrijazi, zbog boljeg biomikroskopskog detektiranja eksfolijativnog sindroma i slike fundusa. Kod 1300 bolesnika populacije ribara i poljoprivrednika nađena je početna i srednja forma senilne makularne degeneracije (SMD) u 18%, dok u urbanoj populaciji samo u 2.5%. U drugoj fazi pregleda pacijenata, pristupilo se analizi vidnog polja, izopterički i meridian thresholds, samo u onih gdje je dijagnosticirana SMD. Treba posebno naglasiti da je u svih pacijenata s SMD nađen i defekt periferije, s nazubljenim uvlačenjima izoptere, kao i povišenje praga podražaja periferije. Autor zaključuje da SMD nije samo bolest makule, već također i periferije retine, te predlaže da se uvede naziv »Age-Related Retinopathy».