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Case Report

# Beta Amyloid in Age- Related Macular Degeneration Lesions in a Patient with Alzheimer's Disease

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## Abstract

**Aim :** To show that age-related macular degeneration ( AMD ) may coexist with Alzheimer's disease (AD). Both diseases may have common features.

**Materials and Methods:** A 81 years old female patient diagnosed with AD was examined by fundus autofluorescein ( FAF ) and optical coherence tomography (OCT ) before and after curcumin usage to detect retinal lesions.

**Results:** FAF after curcumin disclosed hyperfluorescent lesions which corresponded to AMD lesions on OCT.

**Conclusion:** AD patients may have AMD and both diseases share common feautures like beta amyloid accumulation.

***Keywords:*** *Beta Amyloid; Macular Degeneration; Alzheimer's Disease*

## Introduction

Alzheimer's disease (AD) and age-related macular degeneration(AMD) are both neurodegenerative diseases that share common risk factors like increased age, systemic hypertension,diabetes, hypercholesterolemia and also histopathologic features like the deposition of amyloid beta in retinal drusen and senile plaques. In addition, oxidative stress and inflammation are thought to contribute to both diseases [1,2]. But, the genetic risk factors for AD and AMD seem to be different [3]. There is some controversy about potential associations between AD and AMD. Some studies have reported an association between AMD and cognitive impairment, based on mental state examination while other epidemiologic studies found no significant association between AD and AMD [1-3]. There is no definitive answer to whether AD is associated with AMD. Finding the answer for this is important, because treatment for one disease may protect against or exacerbate the other disease. In addition, patients with one disease may need examination for the other disease.

## Materials and Methods

An 81 years old white female diagnosed with AD by neurological examination and brain PET- CT (Figure 1) had retinal examination with fundus autofluorescein (FAF) and spectral domain optical coherence tomography (SD-OCT). Her visual acuity was 0,6 ou (by the Snellen chart). After the first examination, curcumin capsules 500 mg were given orally for 3 days to dye the retinal lesions and the tests were repeated. The areas that showed hyperfluorescence on FAF were inspected by SD-OCT to find the localization of the defect.

## Results

After curcumin usage, two hyperfluorescent lesions were detected (Figures 2, 3). SD-OCT performed through these lesions detected dyed tissues in different areas of dry AMD (Figures 4, 5). In this patient who had early AD, stained areas within degenerated macula were observed. Significant pigment changes and pigment accumulations were the classical appearance of dry AMD in the posterior pole.

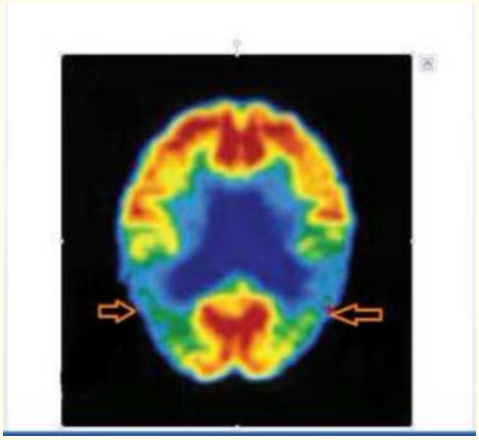

***Figure 1:*** *Biletaral fronto-temporal hypometabolism in AD.*

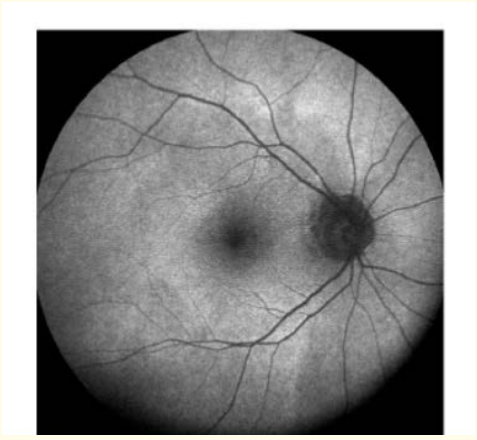

***Figure 2:*** *FAF before Curcumin.*

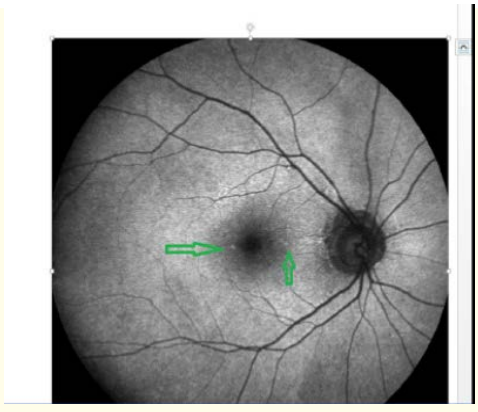

***Figure 3:*** *FAF after Curcumin revealing hyperfluorescent spots.*

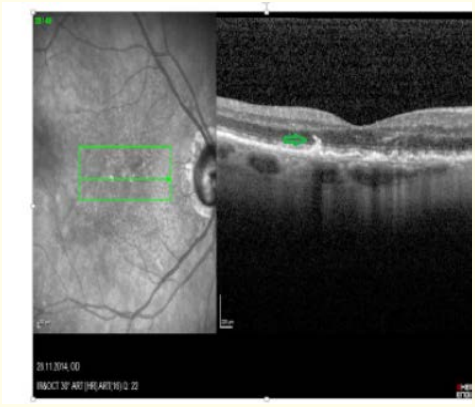

***Figure 4:*** *SD-OCT revealing dry AMD and amyloid beta in the lesion.*

***Figure 5:*** *Amyloid beta in dry AMD.*

## Discussion

Our case report clearly displays AMD in a patient diagnosed with AD. The curcumin stained regions within the degenerated macula show beta amyloid inside drusen- like accumulations. Curcumin' s ability to bind to amyloid beta is known and is also a proof about the nature of these accumulations. Amyloid beta was shown in drusen in previous studies [1,2]. The study results that note no association between AD and AMD may be due to the fact that AD patients are more reluctant to attend regular ophthalmologic examination [4]. In fact, if an association between the two diseases is established in multi-centered trials, a novel drug may treat the two devastating illnessses simultaneously. Our report may be a step towards the realization of this conflicting situation. We believe that there may be a link between AD and AMD and the presence of amyloid beta in both diseases makes the likelihood even stronger.

## Bibliography

1. Ohno-Matsui K. "Parallel findings in age-related macular degeneration and Alzheimer's disease". *Progress in Retinal and Eye Research* 30.4 (2011): 217-238.

2. Kaarniranta K., *et al*. "Age-related macular degeneration (AMD): Alzheimer's disease in the eye?" *Journal of Alzheimer's Disease* 24.4 (2011): 615-631.

3. Proitsi P., *et al*. "Alzheimer's disease and age-related macular degeneration have different genetic models for complement gene variation". *Neurobiology Aging* 33.8 (2012): 1843.e9-17.

4. Keenan TD., *et al*. "No association between age-related macular degeneration and Alzheimer's disease". *JAMA Ophthalmology* 132.1 (2014): 63-68.

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