Benefits of EPA, DHA From Marine Sources

Research suggests a connection between AMD and underlying systemic vascular disease.

BY MICHAEL B. GROSS, MD

A growing number of studies are substantiating the benefit of eating foods high in marine-based omega-3 fatty acids (eicosapentaenoic acid [EPA] and docosahexaenoic acid [DHA]), like salmon, mackerel, and sardines for reducing the risk of developing age-related macular degeneration (AMD).

The most recent study, published in *Ophthalmology*, was carried out by researchers from Johns Hopkins University in Baltimore and was funded by the US National Institute on Aging. The investigators found that people who ate at least one portion of oily fish per week reduced their risk of developing advanced AMD by 60% compared with individuals who consumed fewer portions. The researchers concluded that their findings "support a protective effect of fish/shellfish intake against advanced AMD."[1]

A meta-analysis from 2008 reviewed results encompassing 90,000 participants. This investigation confirmed that eating a diet rich in omega-3 fatty acids could reduce the likelihood of developing the disease by 38%.[2]

FATTY ACIDS APPEAR PROTECTIVE

The team that conducted the meta-analysis believes that the fatty acids protect the nerve cells in the retina, preventing damage. Lead author Elaine Chong, MD, from the University of Melbourne said, "[AMD] is the leading cause of severe vision loss among elderly people. New treatments for AMD are potentially risky and treat only certain forms of the disease. Thus, primary prevention of AMD by modifying risk factors remains an important public health strategy."

What continues to be questioned clinically is at what point in the disease state should EPA and DHA be introduced for optimal benefit. The meta-analysis reported that, although benefits were most pronounced in the setting of late AMD, eating fish twice a week reduced the risk of both early and late AMD. Substantial data continue to accumulate confirming that there is therapeutic benefit for all stages.

Another study evaluated the effect that a diet high in omega-3 fatty acids had on mice retinas that develop AMD-like retinal lesions.[3] This research from the National Eye Institute in Bethesda, Maryland, supported the conclusion that continuous omega-3 therapy, properly dosed, can affect AMD at all stages. Not only did the results suggest that a diet enriched with EPA and DHA can ameliorate the progression of retinal lesions in a mouse model of AMD, but they also indicated that it was associated with lesion reversion.

The study's authors noted, "Our findings in these mice are in line with human studies of AMD risk reduction by long-chain omega-3 fatty acids. This murine model provides a useful tool to evaluate therapies that might delay the development of AMD."

CONCLUSION

In a previous article published in *Advanced Ocular Care*, I noted that these studies strongly suggest a connection between underlying systemic vascular disease and AMD. This process may be mediated through chronic systemic inflammation resulting from the deficiency of marine-based anti-inflammatory omega-3s (EPA and DHA).[4] In view of the lack of fish consumption in the American diet today, and thus a lack of marine-based EPA and DHA, a connection between this deficiency and an increase of early and late AMD has been observed.

Unfortunately, an increased consumption of fish may increase individuals' exposure to contaminants (eg, mercury, polychlorinated biphenyls, dioxin). Ultimately, a fish oil supplement may be the best alternative in this regard. The quality, potency, and molecular structure of the fish oil are crucial in determining efficacy and therapeutic outcome. A future article will discuss these issues more comprehensively.

Michael B. Gross, MD, is the chief medical officer of Physician Recommended Nutriceuticals. Dr. Gross may be reached at (610) 862-0182, ext.116; mgross@prnomegahealth.com.

1. Swenor BK, Bressler S, Caulfield L, West SK. The impact of fish and shellfish consumption on age-related macular degenration [published online ahead of print July 12, 2010]. Ophthalmology. DOI: 10.1016/j.ophtha.2010.03.058.
2. Chong EWT, Kreis AJ, Wong TY, et al. Dietary omega-3 fatty acid and fish intake in the primary prevention of age-related macular degeneration. *Arch Ophthalmol*. 2008;126(6):826-833.
3. Tuo J, Ross RJ, Herzlich AA, et al. A high omega-3 fatty acid diet reduces retinal lesions in a murine model of macular degeneration. *Am J Pathol*. 2009;175:799-807.
4. Gross MB. The unsilent killer: omeganemia. *Advanced Ocular Care*. March 2010;1(2):35.