Diabetes & Nutrition

Fighting Diabetic Blindness

Here are some sad stats. Diabetes is the leading cause of blindness in people between the ages of 20 and 74. About 40 percent of the 10.3 million people in the United States diagnosed with diabetes will develop diabetic macular edema (DME), a condition that occurs when damaged blood vessels leak and cause retinal swelling. Ultimately, DME can lead to blindness.

But there's hope for this group in the form of a tiny implant device developed at UK. Called Envision TD, the implant was created by P. Andrew Pearson, an associate professor of ophthalmology, and former UK researchers Paul Ashton and Thomas Smith. The device is licensed by Bausch & Lomb.

Envision TD is a tiny polymer shell containing .59 milligrams of a drug placed on the end of a plastic strip. While the patient is awake and under local anesthetic, the device is inserted during a 15-minute procedure through an incision in the white of the eye and sutured in place. Once the device is secure, a tiny port in the polymer shell slowly releases the drug into the eye, reducing retinal inflammation. The patient cannot feel the implant, which delivers medication for up to three years.

This device is now FDA approved for the treatment of chronic posterior uveitis, inflammation of the middle layer of the eye. Uveitis is responsible for approximately 10 percent of blindness in the United States.

"Two large studies of diabetic macular edema have demonstrated that the vision of about 60 percent of patients improved and 30 percent significantly improved—much better than standard therapy," Pearson says. Based in part on these results, a trial to evaluate an injectable implant for the treatment of diabetic macular edema is now under way, involving 900 patients.

"The results of these studies are encouraging, especially because these patients had failed standard treatment, making their cases difficult," Pearson says.

Envision TD can restore sight

Basic Science in the Fight against Fat

Twenty years ago in the United States, 5 percent of kids were overweight; today 15 percent are and another 15 percent are headed that way. According to the American Obesity Association, approximately 30 percent of children (age 6 to 11) in this country are overweight, and among adolescents (age 12 to 19), 30 percent are overweight, and nearly 16 percent are obese.

At UK, Eric Smart (pediatrics, above left) has been doing basic research to better understand the physiology of obesity. His research is focused on our body's housekeeper and frontline defender—macrophages—which reach out with a pseudopod to ensnare and gobble up the body's intruders.

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In his lab at UK's Sanders-Brown Center on Aging, Smart and his staff isolated macrophages from normal-weight mice, then fattened up the mice and took a blood sample, again isolating the macrophages.

Smart and his group isolated pieces of membrane to do a protein search. "What we're looking for is protein change after the mice are obese. What proteins are present now that weren't before? What proteins disappeared?"

Then, in the third stage, the mice were put on strict diets and exercised so they would return to their original weight. "The difference in the proteins that show up in this stage is something very important to look at because it has important clinical implications," Smart says.

"What our animal studies will do is give us good candidates for drugs that can be used in therapy, and then we need to set up our own human study to see if what we've discovered is applicable to kids," he says. "What's crucial is to get kids to lose excess weight as quickly as possible, because the shorter the time you're obese, the less damaging the long-term effects are."

Special Meals to Melt Away the Pounds

It's been widely reported that obesity among children and teens in this country has reached epidemic proportions. But a program at the University of Kentucky continues to help kids and adolescents shed significant weight.

James Anderson, a professor of internal medicine at UK and a weight-loss expert, has been helping children and teens take off weight for nearly 25 years, most recently through his HMR program. HMR is the acronym for Health Management Resources, a national health-care company.

"The great thing about HMR's products," Anderson says exuberantly, "is that there are quite a few meal choices." Entrees, with vegetables, include chicken creole, turkey chili and chicken pasta Parmesan, and are typically 220 calories. Bars (160 calories) and milkshakes (120) are also available.

Along with a monitored, low-calorie diet, the patients attend a 90-minute group session to learn the "how to's" of weight loss, including easy ways to lower fat and calories without feeling hungry, and simple strategies to build physical activity into the daily routine. The last stage involves learning strategies for successful long-term weight management.

Anderson cites the "happy results" on one recently completed program, which included 49 adolescents—11 males and 38 females—age 12 to 18, all of whom were in "obese" and "morbidly obese" categories. By the end of the program, weight loss in this group averaged 33.6 pounds, with 31 of the teens losing more than 10 percent of their initial body weight and 16 kids losing more than 20 percent.

"Self-motivated adolescents can lose substantial amounts of weight in an intensive weight-loss program such as this," Anderson says.